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AMRL-TR-75-50-VOL 158

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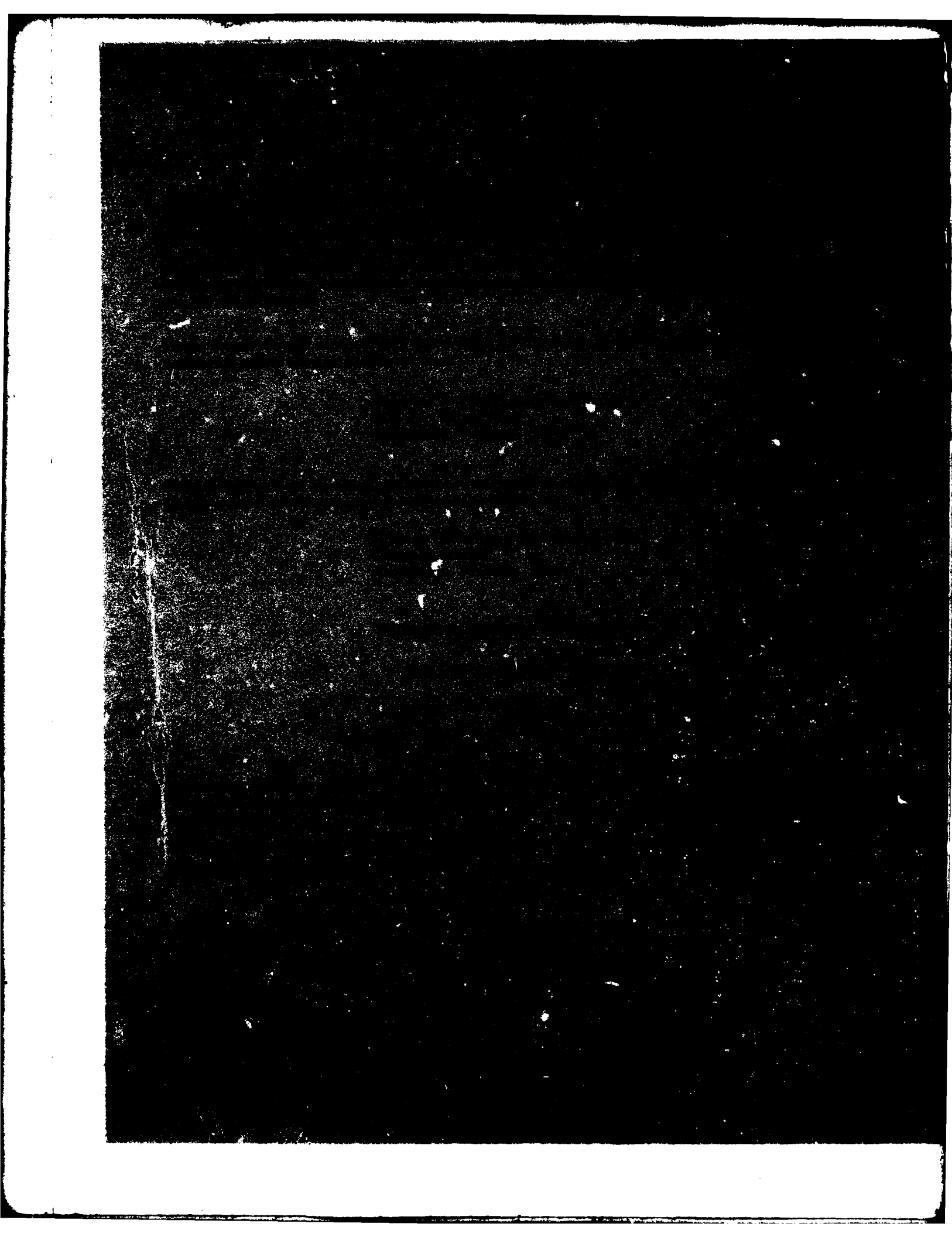
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without standard Air Force ear protectors. Far-field data measured at 19 locations are normalized to standard meteorological conditions and extrapolated from 75 - 8000 meters to derive sets of equal-value contours for these same seven acoustic measures as functions of angle and distance from the source. Refer to Volume 1 of this handbook, "USAF Bioenvironmental Noise Data Handbook, Vol 1: Organization, Content and Application," AMRL-TR-75-50(1) 1975, for discussion of the objective and design of the handbook, the types of data presented, measurement procedures, instrumentation, data processing, definitions of quantities, symbols, equations, applications, limitations, etc.

PREFACE

This report was prepared by the Biodynamic Environment Branch, Air Force Aerospace Medical Research Laboratory, under Project/Task 723107, Technology to Define and Assess Environmental Quality of Noise, from Air Force Operations.

The author gratefully acknowledges Mr. John N. Cole and Mr. Robert Powell for assistance in preparing this report, SSgt Jorge Noverola, Mr. Robert Lee and Ms Anne Murney for assistance in acquiring the raw data, Mr. Henry Mohlman, Mr. Keith Kettler and Mr. Fred Lampley of the University of Dayton for assistance in the mechanics of data processing and Mrs. Norma Peachey for typing and assistance in preparation of graphics.

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INTRODUCTION

The USAF F-106A is a single-seat, all-weather fighter/interceptor aircraft powered by a J75-P-17 turbojet engine. The aircraft was manufactured by General Dynamics, Convair Division and the engine by United Aircraft, Pratt and Whitney Division.

This volume provides measured and extrapolated data defining bioacoustic environments produced by this aircraft during ground runup operations. Such data are essential to evaluate ear protection requirements, limiting personnel exposure times, voice communication capabilities, and annoyance problems associated with ground runups of the F-106A aircraft.

This volume is one of a series published by the Air Force Aerospace Medical Research Laboratory (AFAMRL) under the same report number (AMRL-TR-75-50) as a multi-volume handbook that quantifies the noise environments produced at flight/ground crew locations and in surrounding communities by operations of Air Force aircraft and ground support equipment. The far-field, community-type, noise data in the handbook describe the noise produced during ground operations of aircraft, ground support equipment, and other ground-based equipment or facilities.

Volume 1 of this handbook discusses the objectives and design of the handbook, types of data presented, measurement procedures, instrumentation, data processing, definitions of quantities, symbols, equations, applications, limitations, etc. Refer to Volume 1 (reference 1) for such information because it is not repeated in other handbook volumes.

A cumulative index lists those aerospace systems contained in the handbook, and identifies the specific volumes containing each type of environmental noise data available (i.e., inflight/flight crew and passenger noise, near-field ground crew noise, far-field/community noise). Volume numbers are assigned sequentially as individual volumes are published. This index is periodically updated as individual volumes are published and is available upon request from AFAMRL/BBE, Wright-Patterson AFB, OH 45433. Organizations on the distribution list for the handbook will automatically receive a copy of each updated index.

Direct any questions concerning the technical data in this report and other handbook volumes to: AFAMRL/BBE, Wright-Patterson AFB, OH 45433; AUTOVON 78-53675 or 78-53664; Commercial (513) 255-3675 or (513) 255-3664.

1. Cole, John N., USAF Bioenvironmental Noise Data Handbook, Volume 1: Organization, Content and Application, AMRL-TR-75-50(1), Aerospace Medical Research Laboratory, Wright-Patterson Air Force Base, Ohio, 1975.

NEAR-FIELD NOISE

MEASUREMENT

AFAMRL acquired near-field noise data on the F-106A aircraft during ground runup operations of its turbojet engine. For these tests, the aircraft was located on a concrete apron at Kelly AFB TX. Table 1 gives the surface meteorological conditions and the engine power conditions. The ground-crew chief selected power conditions and near-field locations generally used during routine maintenance or engine runup for preflight checks.

At each near-field location a test engineer randomly moved a hand-held microphone in and around each location, probing all areas where a crew member's head would normally be located. He recorded all of the noise sample on magnetic tape. During analysis of each sample, he determined the root-mean-square sound pressure using a 4- or 8-second integration time to derive a power-averaged level for each location.

Figure 1 shows the five numbered near-field locations where ground crews are usually located for maintenance and/or preflight checkout operations. Estimates of noise levels at other locations in the near-field are difficult since the noise source is spatially distributed, i.e., not a point source. The noise levels at near-field locations can vary widely depending upon relative distances from each noise source (intake noise, exhaust noise, panel resonances, internal engine noise through the engine wall, etc.).

Table 1 lists the numeric/alphabetic designators used on the data pages in this report to identify the measurement locations and test conditions. For example, the designator 1/A means ground crew location 1 and test condition A.

RESULTS

The measured data presented in Table 2 define the sound pressure levels (SPL) produced by the F-106A aircraft at the five ground crew locations. This table includes the overall, 1/3 octave band, and octave band levels. From these data one can calculate the variety of measures in Table 3 which are widely used to assess the effects of noise on personnel and their performance.

All near-field data are for the meteorological conditions at the time of test but are valid for all typical airbase meteorology because of the short sound propagation distances involved.

TABLE 1
MEASUREMENT LOCATIONS AND TEST CONDITIONS
FOR NEAR-FIELD NOISE MEASUREMENTS

F-106A Aircraft, Ground Runups, Kelly AFB TX
 9 June 1981
 Tail # 90061

Ground Crew Location

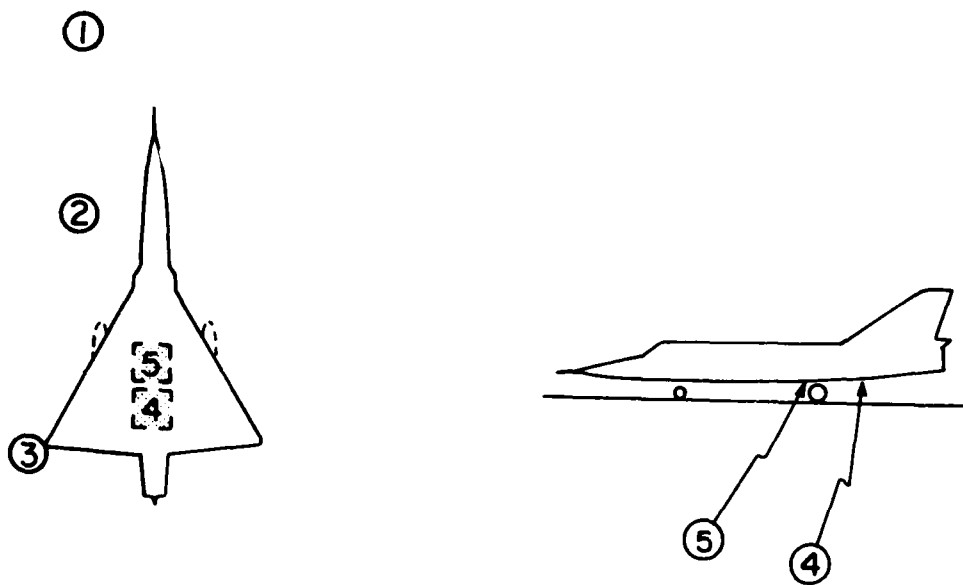
1	Marshall
2	Telephone Talker
3	Wheel Chocks
4	Trim Adjustment
5	Hydraulic Check

Aircraft Engine Operation

A	Idle (59% RPM)
B	95% RPM
C	Military Power (102% RPM)
D	Afterburner Power (102% RPM)

Meteorology

Temperature	33	C
Bar Pressure	.760	m Hg
Rel Humidity	55	%
Wind - Speed	3.1	m/sec (6 Kts)
Wind - Direction	190	Deg



**Figure 1. Near-Field Measurement Locations
On A Concrete Apron At Kelly AFB TX**

FAR-FIELD NOISE

MEASUREMENTS

AFAMRL acquired far-field data during a one hour test period, thus keeping similar meteorological conditions throughout the test. Figure 2 shows the ground runup pad, aircraft orientation and the 19 microphone measurement sites on a semicircle. The center of the 76 meter radius semicircle used in surveying the J75-P-17 engine was on the ground directly below the intersection of the aircraft's centerline and the plane passing through the engine's exhaust-nozzle exit. The ground runup area did not have a blast deflector; therefore, the engine's exhaust was in a "free-flow" condition.

Table 4 provides cockpit readouts of some engine characteristics (Engine Pressure Ratio, fuel flow, etc.) for each power setting used in the far-field tests. Also listed in this table are the surface meteorological conditions during data acquisition.

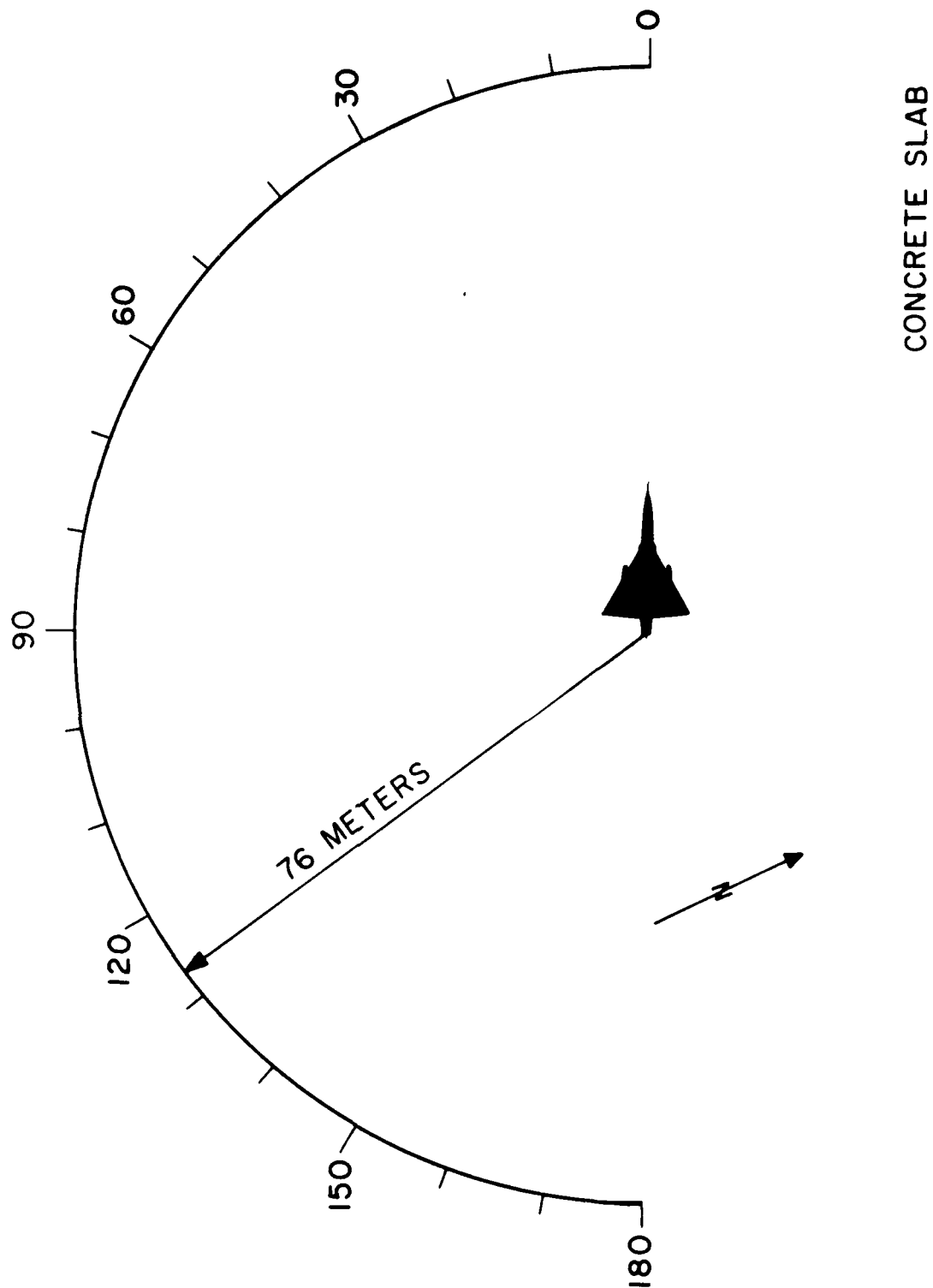
All microphone measurement sites are in the acoustic far-field of the source where the sound wavefronts spherically diverge and the noise source may be regarded as a point source.

A portable microphone/tape-recorder system was used to sequentially record the noise at each far-field location. The microphone was attached to a hand-held pole, pointed at the source (0° angle of incidence) and vertically scanned from 0.5 to 3 meters for a period of 5-10 seconds during data acquisition at each microphone location. These samples were then time-integrated to derive a root-mean-square sound pressure level. Vertical scanning and time-integrating together reduce anomalies frequently present in data acquired by a fixed height microphone.

RESULTS

Table 5 lists the overall and $1/3$ octave band SPL measured at the far-field locations under meteorological conditions at the time of the test. Data in all other figures and tables are based on these levels. These data were normalized to 100 meters distance and standard meteorological conditions (15 C temperature, 70% relative humidity, 0.760 meter Hg barometric pressure) and used to derive the graphic data in Figure 3 which provides a compact summary of the far-field noise characteristics of the F-106A aircraft in a standard format.

Figure 4 and Table 6 present two basic acoustic measures, the acoustic power level and the directivity index, respectively. The acoustic power level describes the power radiated by the source as a function of frequency. The directivity index is a standard acoustical engineering measure which describes the geometric way in which the source radiates this power as a function of both frequency and angle from source. These basic source measures are primarily of interest for acoustical engineers and noise generation/control specialists.



**Figure 2. Far-Field Measurement Locations
On Concrete Apron at Kelly AFB TX**

Estimates of noise characteristics for intermediate power settings (e.g., 88% engine) can be determined as explained in Volume 1 of this handbook.

Figures 5 through 11 are sets of equal noise contours describing seven different measures of noise as a function of angle and distance from the source for standard day meteorology. They are respectively, overall sound pressure level, C-weighted sound level, A-weighted sound level, perceived noise level, speech interference level, permissible exposure times for personnel and octave band sound pressure levels.

Test personnel performed noise surveys during quiet periods when the background noise was minimal, e.g., early in the morning when no other aircraft or engine test stands were operating. Data eliminated because they were near the background/electronic noise were generally not significant because the levels were so low (e.g., Table 5 at idle power).

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)													IDENTIFICATION:	
2													OMEGA 3.2	
													TEST BN-078-001	
NOISE SOURCE/SUBJECT:													RUN 01	
F-106A AIRCRAFT														
GROUND CREW													25 JAN 82	
NEARFIELD NOISE LEVELS													PAGE F1	
LOCATION/CONDITION														
FREQ (HZ)	1/A	1/B	1/C	1/D	2/A	2/B	2/C	2/D	3/A	3/B	3/C	3/D		
25	70	81	85	99	72	85	88	98	83	93	98	109		
31.5	69	83	88	99	73	87	90	102	82	96	98	109		
40	71	87	90	102	77	89	92	104	83	97	100	110		
50	73	88	93	103	76	90	94	106	83	98	102	111		
63	77	89	95	105	82	92	97	108	82	100	103	115		
80	78	92	94	105	82	95	100	110	87	101	105	116		
100	80	92	96	107	85	95	100	110	86	103	106	116		
125	81	93	98	108	84	96	99	109	83	101	105	114		
160	77	93	97	107	78	96	100	111	81	101	104	113		
200	74	93	96	106	75	95	99	109	80	100	104	113		
250	76	93	97	105	77	95	100	107	83	105	109	116		
315	78	93	99	104	81	102	100	107	85	109	114	121		
400	77	92	97	102	86	98	101	106	85	110	114	122		
500	83	92	96	99	82	96	100	106	80	106	110	119		
630	87	97	100	103	80	99	103	109	82	107	113	120		
800	88	94	99	102	86	100	104	109	83	108	113	121		
1000	89	95	99	102	88	101	106	109	86	107	113	121		
1250	92	94	98	100	87	100	105	108	81	107	112	120		
1600	89	95	98	100	87	99	102	107	82	106	112	120		
2000	88	97	96	98	87	100	101	105	80	105	112	119		
2500	86	96	94	96	83	99	99	103	75	104	110	117		
3150	87	95	92	95	85	97	98	102	75	104	109	117		
4000	85	94	90	93	83	96	97	100	74	102	108	115		
5000	84	93	91	93	82	97	96	99	75	102	109	115		
6300	82	90	88	90	81	94	95	98	80	100	107	114		
8000	81	90	88	90	78	94	94	97	73	100	107	113		
10000	79	89	88	90	77	94	95	97	71	100	107	114		
OVERALL	99	107	110	117	97	111	114	121	96	119	124	132		
LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.														

LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)										IDENTIFICATION:	
2										OMEGA 3.2	
										TEST 8N-878-001	
										RUN 02	
										25 JAN 82	
										PAGE F2	
NOISE SOURCE/SUBJECT: (OPERATION:)											
F-106A AIRCRAFT ()											
GROUND CREW ()											
NEARFIELD NOISE LEVELS ()											
										LOCATION/CONDITION	
FREQ (HZ)	4/A	4/B	4/C	4/D	5/A	5/B	5/C	5/D			
25	86	95	97	110	89	100	102	107			
31.5	85	96	97	109	86	98	102	105			
40	87	97	99	113	86	99	103	106			
50	86	98	102	113	86	98	103	110			
63	87	102	105	114	89	99	104	113			
80	95	105	108	119	104	105	107	115			
100	94	107	110	119	98	103	113	117			
125	95	102	104	112	98	107	107	114			
160	87	100	106	113	95	104	107	116			
200	83	100	106	114	95	105	108	116			
250	87	101	105	114	95	103	105	112			
315	97	104	108	114	104	105	108	115			
400	92	103	107	114	96	106	111	119			
500	96	105	109	117	93	113	111	117			
630	96	106	110	119	101	108	112	117			
800	98	106	111	123	98	107	112	116			
1000	107	106	112	119	104	109	114	118			
1250	101	106	112	119	100	107	111	116			
1600	98	107	110	121	104	108	111	115			
2000	94	105	108	117	102	109	110	114			
2500	87	108	107	113	99	111	112	114			
3150	86	101	105	115	97	109	111	114			
4000	84	99	102	112	99	110	113	113			
5000	83	101	102	110	101	108	112	114			
6300	86	98	100	108	108	107	110	112			
8000	79	99	100	104	100	109	111	113			
10000	79	100	100	104	95	111	112	114			
OVERALL	110	118	121	130	115	122	125	129			

LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)												
2 OCTAVE BAND												
IDENTIFICATION:												
OMEGA 3.2												
TEST BN-078-001												
RUN 01												
25 JAN 82												
PAGE J1												
NOISE SOURCE/SUBJECT: OPERATION:												
F-106A AIRCRAFT												
GROUND CREW												
NEARFIELD NOISE LEVELS												
LOCATION/CONDITION												
FREQ (HZ)	1/A	1/B	1/C	1/D	2/A	2/B	2/C	2/D	3/A	3/B	3/C	3/D
31.5	75	89	92	105	79	92	95	107	87	100	104	114
63	81	95	99	109	85	98	102	113	89	105	108	119
125	84	97	102	112	88	100	104	115	88	106	110	119
250	81	98	102	109	83	104	104	113	88	111	115	122
500	89	99	103	106	88	103	106	112	87	112	117	125
1000	95	99	103	106	92	105	110	114	88	112	117	125
2000	93	101	101	103	90	104	106	110	85	110	116	124
4000	90	99	96	98	88	101	102	105	79	107	113	120
8000	86	94	93	95	84	99	100	102	81	105	112	118
OVERALL	99	107	110	117	97	111	114	121	96	119	124	132

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)									
2									
OCTAVE BAND									
IDENTIFICATION:									
NOISE SOURCE/SUBJECT: (OPERATION:)									
F-106A AIRCRAFT ()									
GROUND CREW ()									
NEARFIELD NOISE LEVELS ()									
PAGE J2									
LOCATION/CONDITION									
FREQ (HZ)									
4/A 4/B 4/C 4/D 5/A 5/B 5/C 5/D									
31.5	91	101	103	116	92	104	107	110	
63	96	107	111	121	104	106	109	118	
125	97	109	112	120	102	110	115	121	
250	98	107	111	119	105	109	112	120	
500	100	110	114	122	102	115	116	123	
1000	108	111	116	125	106	112	117	121	
2000	100	112	113	123	107	114	116	119	
4000	89	105	108	117	104	114	117	118	
8000	87	104	105	111	109	114	116	118	
OVERALL	110	118	121	130	115	122	125	129	

3

3

[illegible]

LOCATION/CONDITION											
1/A	1/E	1/C	1/D	2/A	2/B	2/C	2/D	3/A	3/B	3/C	3/D

HAZARD/PROTECTION
C-WEIGHTED OVERALL SOUND LEVEL (OASLC IN OBC) AT EAR
A-WEIGHTED OVERALL SOUND LEVEL (OASLA IN OBA) AT EAR
MAXIMUM PERMISSIBLE TIME (T IN MINUTES) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)
NO PROTECTION

OASLC	99	107	110	116	97	111	114	121	96	118	123	131
OASLA	99	106	108	111	96	110	113	117	92	117	122	130
T	36	11	8	4.5	60	5	3.2	P	120	P	P	P

[illegible]

AMERICAN OPTICAL	1700 EAP	NUFFS				
960	675	404	101	960	339	202
50	960	85	42			

	960	960	877	202	960	807	480	120	960	240	101	25
V-510 CAD DRUMS												
T	960	960	877	202	960	807	480	120	960	240	101	25
UASLTA*	88	77	81	88	81	84	84	84	87	88	93	101

[illegible]

	AMERICAN OPTICAL	1700 EAR MUFFS PLUS V-51R EAR PLUGS	QASIA*	59	66	69	73	57	70	75	79	54	77	83	91
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[illegible]

OASLA*	72	79	80	85	69	83	86	90	65	89	95	102
T	980	960	960	404	960	571	339	170	960	202	71	21

COMMUNICATION

TABLE: MEASURES OF HUMAN NOISE EXPOSURE										IDENTIFICATION:
3										
NOISE SOURCE/SUBJECT: (OPERATION:)										OMEGA 3-2
F-106A AIRCRAFT ()										TEST BN-078-001
GROUND CREW ()										RUN 02
NEARFIELD NOISE LEVELS ()										25 JAN 82
()										PAGE H2
4/A 4/B 4/C 4/D 5/A 5/B 5/C 5/D										
HAZARD/PROTECTION										
C-WEIGHTED OVERALL SOUND LEVEL (OASLC IN DB) AT EAR										
1-WEIGHTED OVERALL SOUND LEVEL (OASLA IN DB) AT EAR										
MAXIMUM PERMISSIBLE TIME (T IN MINUTES) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)										
NO PROTECTION										
OASLC	110	118	121	130	114	121	124	129		
OASLA	109	116	120	129	114	121	123	127		
T	6	P	P	P	2.7	P	P	P		
MINIMUM OPL EAR MUFFS										
OASLA*	83	93	96	105	89	95	99	105		
T	571	101	60	13	202	60	36	13		
AMERICAN OPTICAL 1700 EAF MUFFS										
OASLA*	78	88	91	100	83	91	94	100		
T	960	240	143	30	571	143	85	30		
V-51R EAR PLUGS										
OASLA*	85	90	94	103	86	94	97	101		
T	404	170	85	18	339	85	50	25		
AMERICAN OPTICAL 1700 EAF MUFFS PLUS V-51R EAR PLUGS										
OASLA*	72	77	81	90	74	80	83	88		
T	960	960	807	170	960	960	571	240		
H-133 GROUND COMMUNICATION UNIT										
OASLA*	83	89	93	101	85	93	96	99		
T	571	202	101	25	404	101	60	36		
COMMUNICATION										
PREFERRED SPEECH INTERFERENCE LEVEL (PSIL IN DB)										
PSIL	103	111	114	123	105	114	116	121		
ANNOYANCE										
PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT IN PNDB)										
TONE CORRECTION (C IN DB)										
PNLT	122	132	133	142	130	137	139	140		
C	3	1	1	1	2	2	1	0		

**TABLE 4
TEST CONDITIONS
FOR FAR-FIELD NOISE MEASUREMENTS**

F-106A Aircraft, Ground Runups, Kelly AFB TX
9 June 1981
Tail # 90061

Aircraft Engine Operation

Idle	59	% RPM Core Speed
	1.20	Engine Pressure Ratio
	220	C, Exhaust Gas Temperature
	1500	LBS/HR, Fuel Flow
85% RPM	85	% RPM
	1.31	EPR
	375	C, EGT
	3100	LBS/HR, FF
95% RPM	95	% RPM
	1.65	EPR
	483	C, EGT
	6000	LBS/HR, FF
Military Power	102	% RPM
	1.99	EPR
	610	C, EGT
	9000	LBS/HR, FF
Afterburner Power	102	% RPM
	1.99	EPR
	608	C, EGT
	9000	LBS/HR, FF(Plus Afterburner)

Meteorology

Temperature	33	C
Bar Pressure	.760	M Hg
Rel Humidity	55	%
Wind - Speed	3.1	M/Sec (6 Kts)
- Direction	190	Deg

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)																		IDENTIFICATIONS	
1/3 OCTAVE BAND																			
5																		OMEGA 1.4	
DISTANCE = 76 METERS																		TEST 8N-078-001	
NOISE SOURCE/SUBJECT:																		RUN 01	
(F-106A AIRCRAFT																			
(IDLE POWER																			
(59% RPM																		25 JAN 82	
(FREE FLOW																			
(FAR FIELD NOISE																		PAGE 2	
METEOROLOGY:																			
(TEMP = 33 C																			
(BAR PRESS = .760 M HG																			
(REL HUMID = 55 %																			
ANGLE (DEGREES)																			
FREQ	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
(HZ)																			
25							70<			71<							72<	71<	72<
31.5							69<				69<						70<	70<	72<
40																	70<	73<	73<
50																	69<	73<	70<
63	64<	66<	66<	67<	68<	67<	67<	65<	66<	66<	66<	67<	67<	67<	70<	69<	72	73	70<
80	67<	70<	70<	71	72	70<	70<	70<	67<	69<	67<	68<	67<	69<	70<	69<	70<	71<	69<
100	70<	70<	72	71	72	71	70<	70<	70<	72	72	71	71	71	73	72	72	72	69<
125	72	71	72	71	71	71	70	70	70	71	72	71	71	72	74	73	72	71	68<
160	68	66	69	68	68	67	67	66	69	70	69	70	70	71	74	71	69	69	65
200	69	67	69	69	67	67	66	66	67	68	69	68	69	70	73	70	67	65	62
250	68	69	71	68	68	66	66	66	67	67	69	70	72	72	73	69	69	65	63
315	72	72	72	69	67	68	68	67	67	67	67	67	70	70	70	67	66	63	59
400	73	73	73	68	68	66	65	65	66	66	66	65	68	66	68	64	62	60	55<
500	72	73	73	67	68	66	66	63	63	63	62	61	65	63	65	62	60	59	53<
630	73	75	71	66	66	67	64	64	64	63	62	61	64	61	65	61	60	58	52<
800	78	77	70	68	70	71	68	65	64	64	62	60	62	60	64	60	60	57	52<
1000	81	80	76	75	75	75	69	68	67	65	63	60	63	60	64	61	63	59	54
1250	85	84	81	79	78	77	69	72	69	64	62	58	61	58	62	61	61	59	52
1600	81	77	76	76	77	73	68	68	66	65	63	55	57	54	58	56	58	55	48<
2000	79	78	74	75	74	72	68	63	64	63	60	53	57	53	60	55	56	54	46
2500	75	74	72	73	71	69	62	60	58	57	55	51	55	51	61	54	56	53	44
3150	76	77	75	74	73	71	66	63	61	62	59	56	58	55	66	60	61	56	48
4000	74	74	72	70	70	68	63	62	60	62	60	54	56	52	60	56	56	56	43
5000	72	72	71	69	69	67	62	60	59	59	58	53	56	52	62	55	58	56	43
6300	70	71	68	68	68	69	67	69	67	68	64	58	58	50	58	54	56	56	43
8000	68	68	66	64	64	62	58	58	58	58	56	52	55	49	57	54	56	55	42<
10000	64	65	63	61	60	58	53	53	51	54	55	52	55	50	59	57	56	55	43
OVERALL	90	89	87	85	85	84	81	80	80	81	80	79	80	81	83	81	82	82	80

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

[illegible]

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

[illegible]

FIGURE: NORMALIZED FARFIELD NOISE LEVELS

3 DISTANCE = 100 METERS

NOISE SOURCE/SUBJECT:
F-106A AIRCRAFT
(J75-P-17 ENGINE)
FAR FIELD NOISE

(OPERATION:
(85% RPM
(FREE FLOW
(

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST BN-070-001
RUN 02
25 JAN 62
PAGE 6

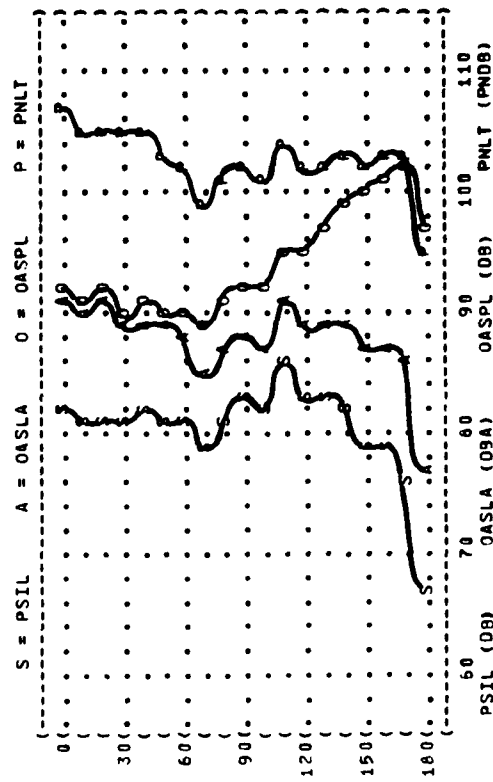
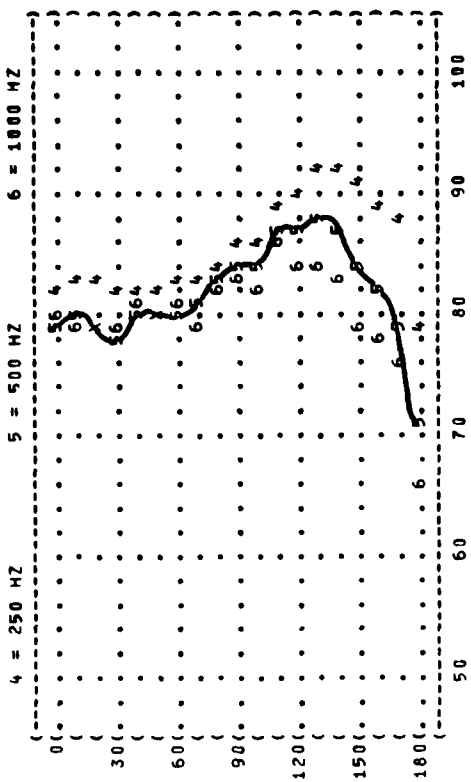


FIGURE 1 NORMALIZED FARFIELD NOISE LEVELS

3 DISTANCE = 100 METERS

NOISE SOURCE/SUBJECT: (OPERATION:)
 F-106A AIRCRAFT (95% RPM)
 (J75-P-17 ENGINE) (FREE FLOW)
 FAR FIELD NOISE ()

METEOROLOGY: ()
 TEMP = 15 C
 BAR PRESS = .760 M HG
 REL HUMID = 70 %

IDENTIFICATION: ()
 OMEGA 1.4
 TEST 8N-078-001
 RUN 03
 25 JAN 62
 PAGE 6

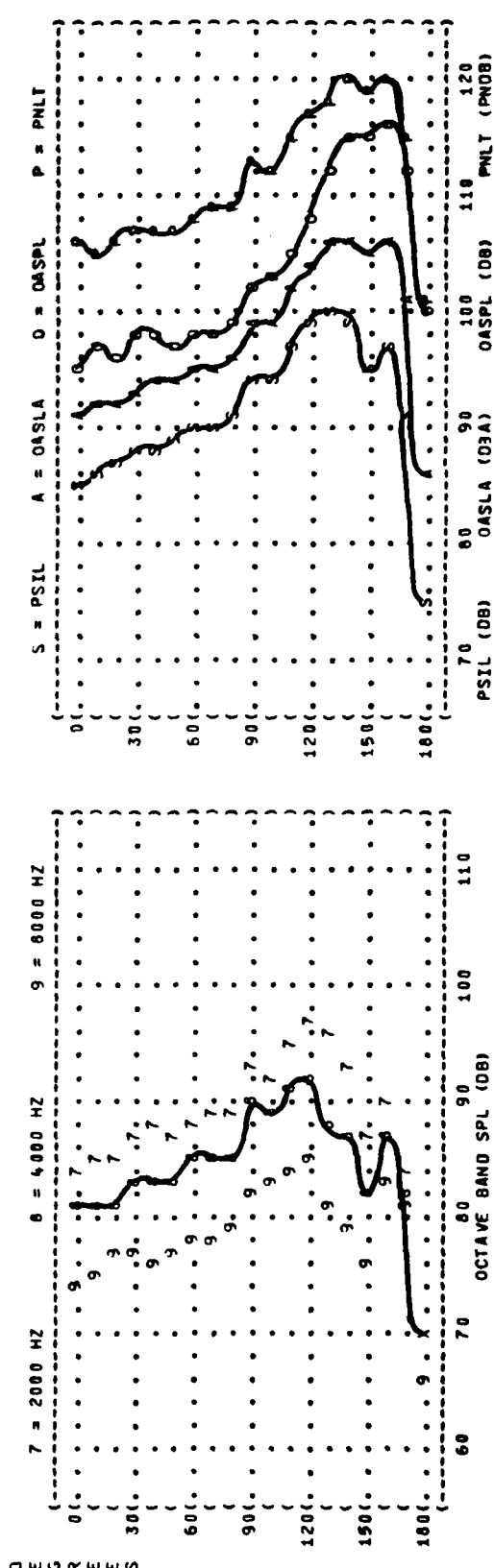
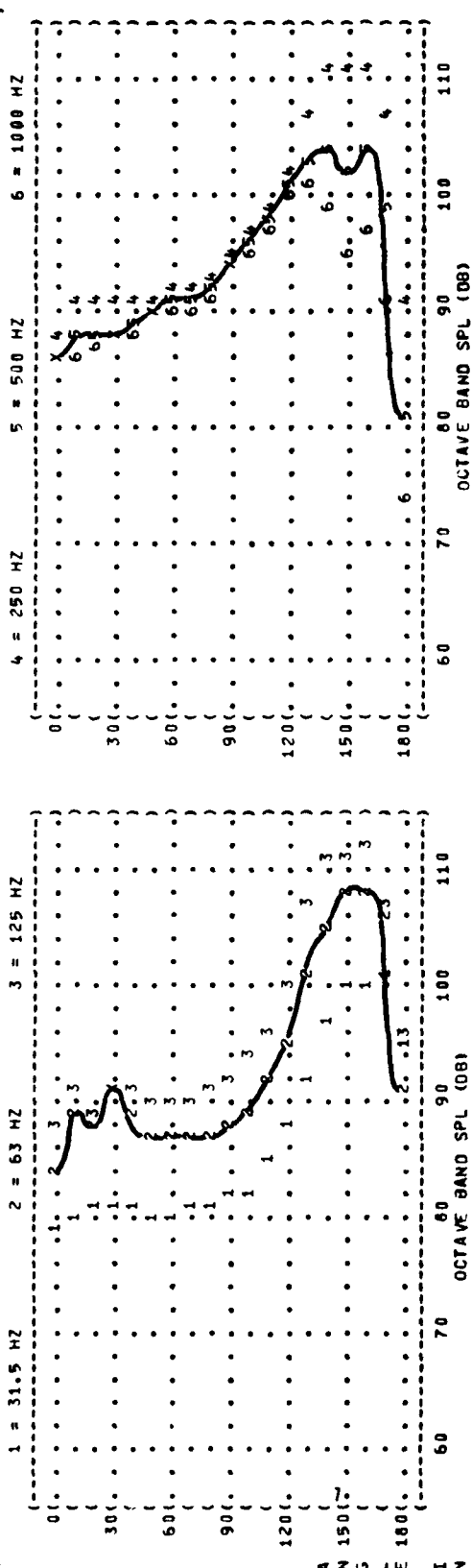


FIGURE: NORMALIZED FARFIELD NOISE LEVELS

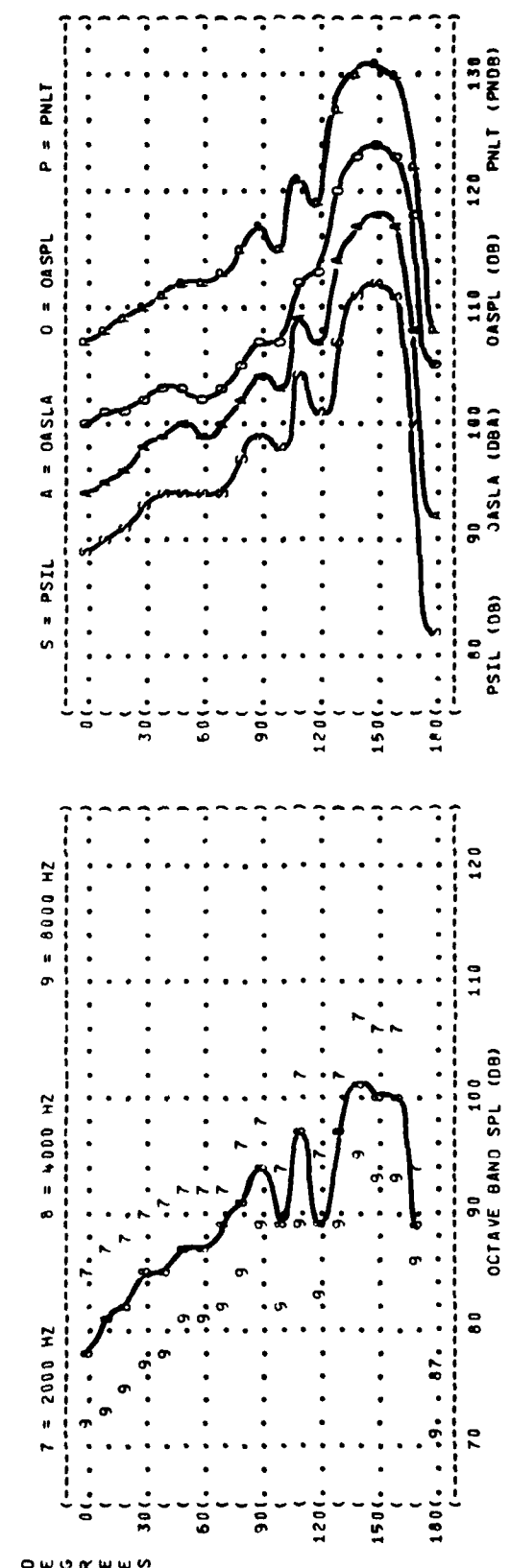
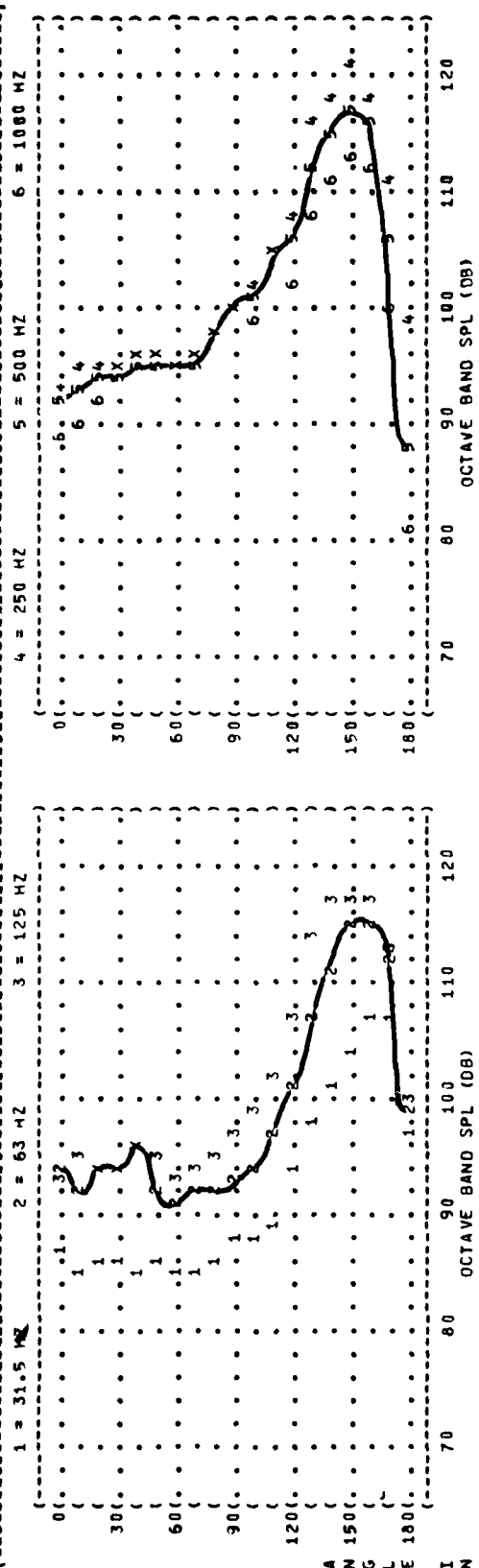
3 DISTANCE = 100 METERS

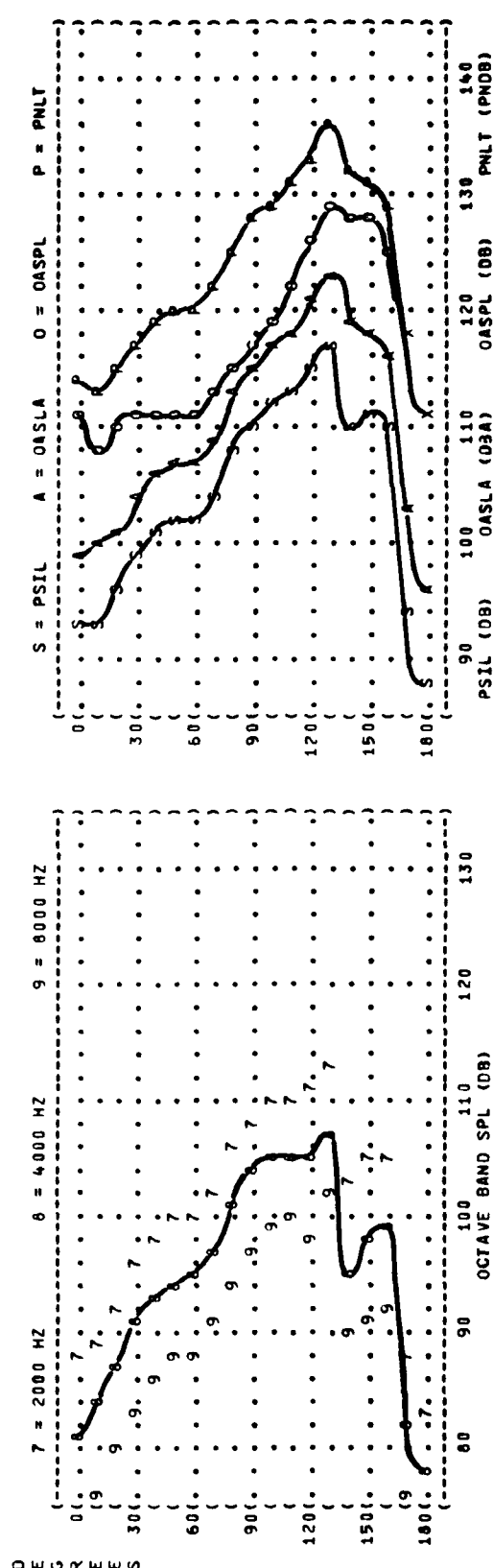
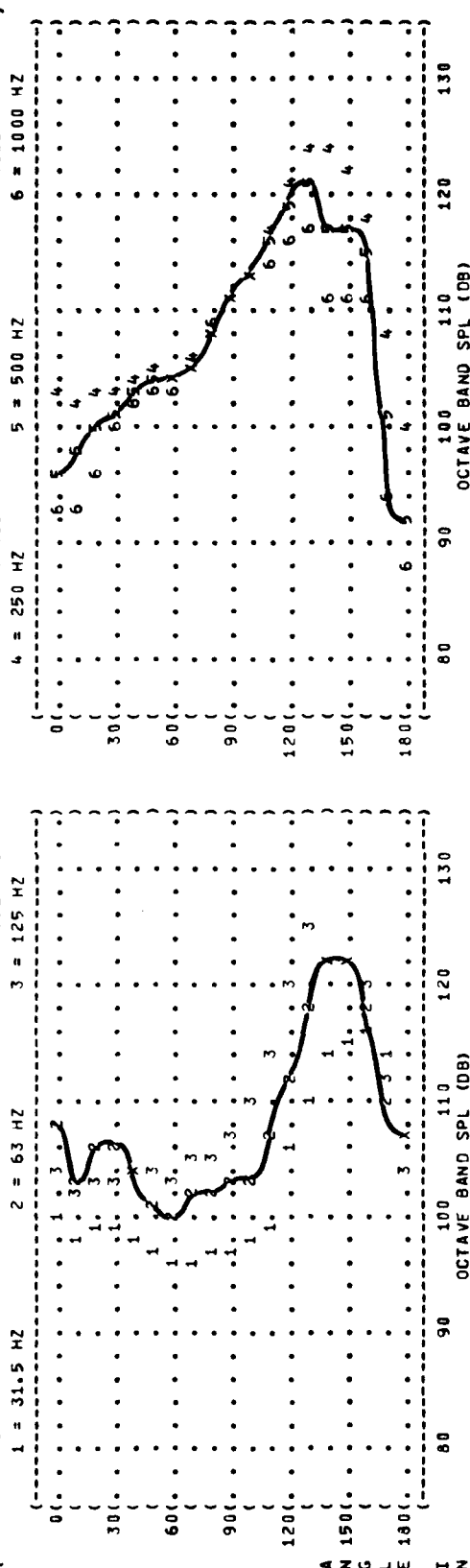
NOISE SOURCE/SUBJECT: F-106A AIRCRAFT (J75-P-17 ENGINE) FAR FIELD NOISE

OPERATION: MILITARY PMR (102% RPM) FREE FLOW

METEOROLOGICAL: TEMP = 15 C BAR PRESS = .7604 HG REL HUMID = 70 %

IDENTIFICATION: OMEGA 1.4 TEST 8N-078-001 RUN 04 25 JAN 82 PAGE 6



[illegible]

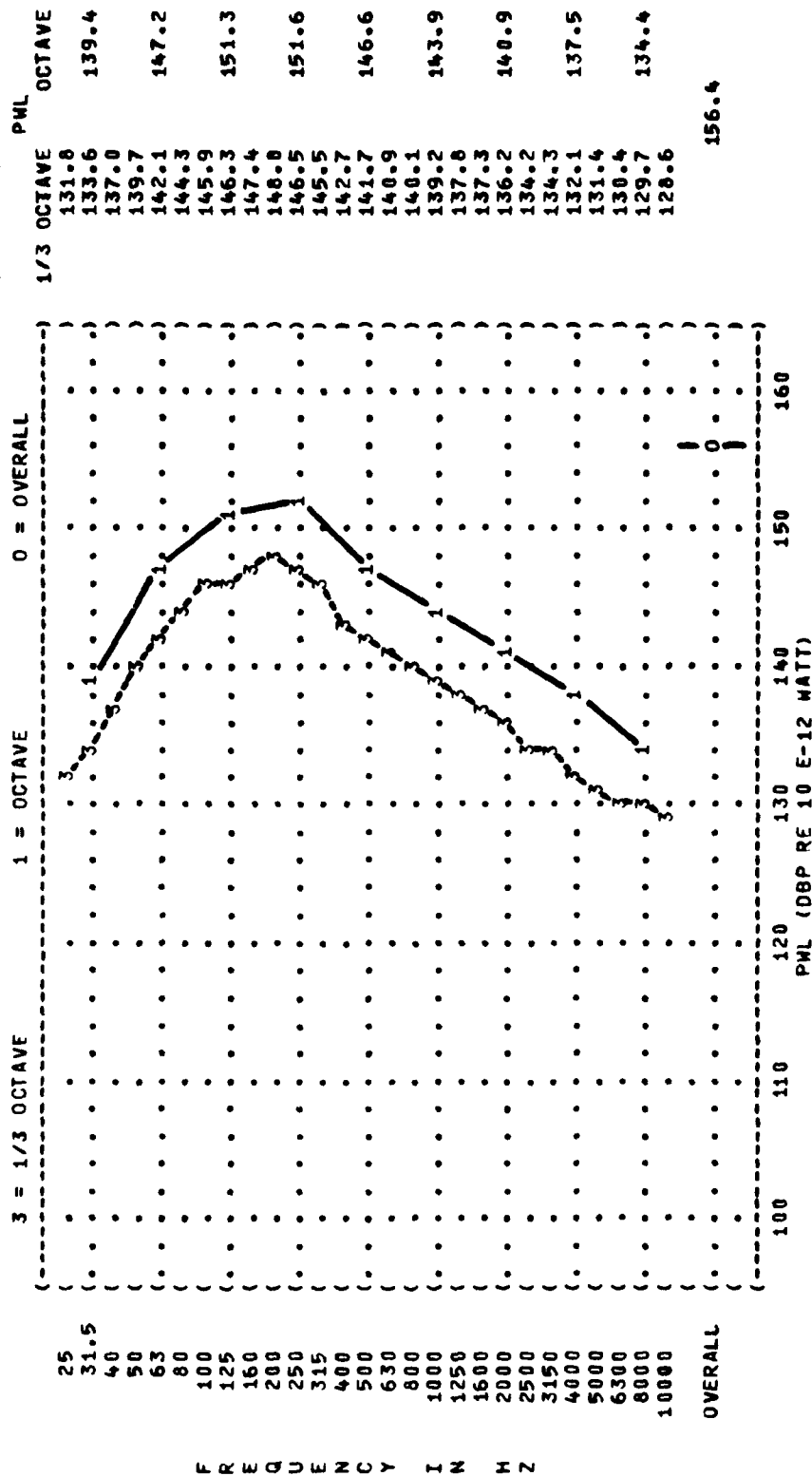
[illegible]

FIGURE: ACOUSTIC POWER LEVEL (PWL)

4

IDENTIFICATIONS:

OMEGA 1.4

TEST BN-078-001

RUN 04

25 JAN 82

PAGE 3

NOISE SOURCE/SUBJECT:

OPERATIONS:

MILITARY PWR

102% RPM

FREE FLOW

METEOROLOGY:

TEMP = 33 C

BAR PRESS = .760 M HG

REL HUMID = 55 %

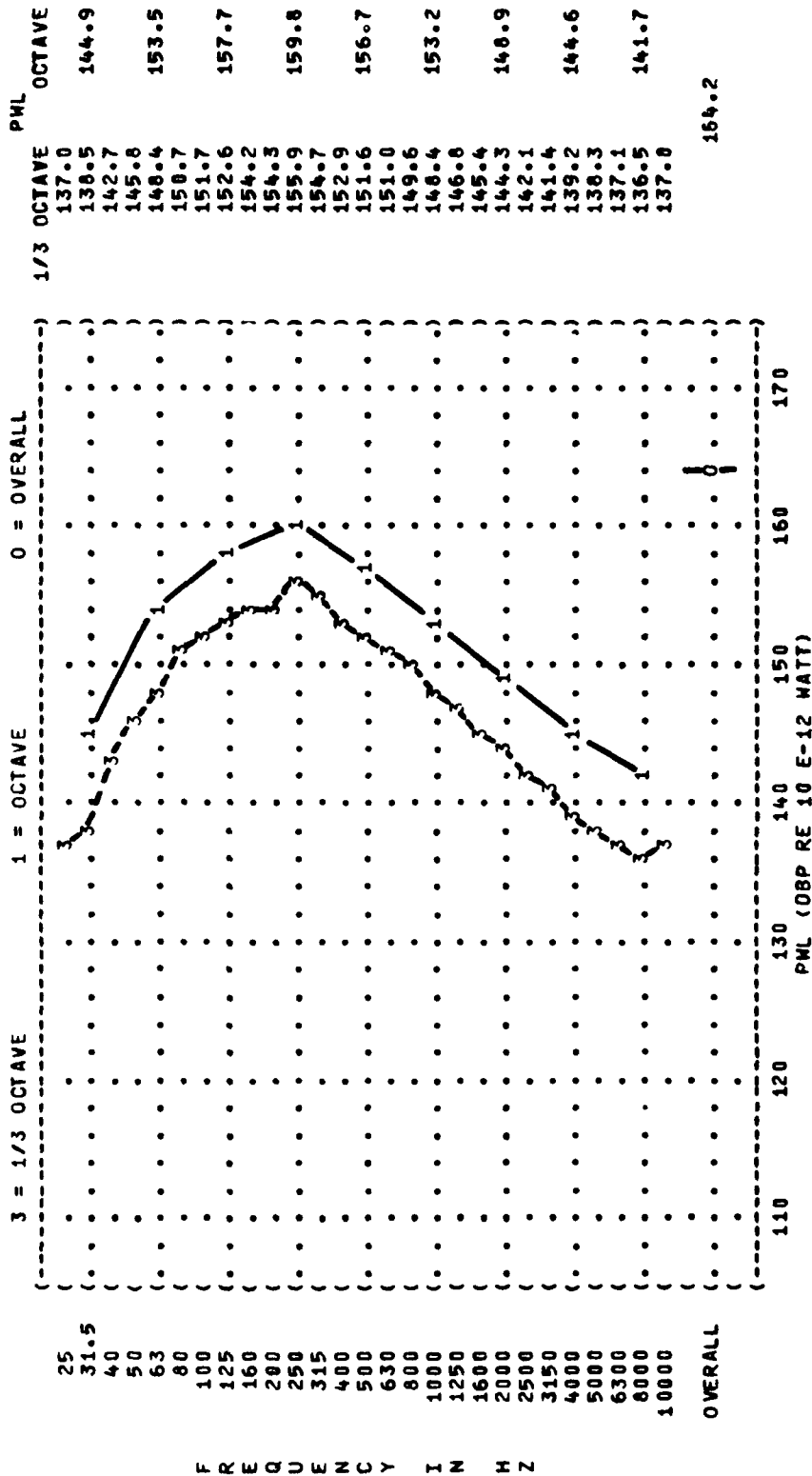


TABLE: DIRECTIVITY INDEX (DB)										IDENTIFICATION:									
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NOISE SOURCE/SUBJECT:										TEST BN-078-001									
F-106A AIRCRAFT										RUN 02									
(J75-P-17 ENGINE)										25 JAN 82									
FAR FIELD NOISE										PAGE 4									
FREQ										METEOROLOGY:									
(HZ)										TEMP = 33 C									
1/3 OCTAVE										BAR PRESS = .760 H MG									
25										REL HUMID = 55 %									
31.5										ANGLE (DEGREES)									
40																			
50																			
63																			
100																			
125																			
160																			
200																			
250																			
315																			
400																			
500																			
630																			
800																			
1000																			
1250																			
1600																			
2000																			
2500																			
3150																			
4000																			
5000																			
6300																			
8000																			
10000																			
OCTAVE																			
31.5																			
63																			
125																			
250																			
500																			
1000																			
2000																			
4000																			
8000																			
OVERALL																			

TABLE: DIRECTIVITY INDEX (DB)										IDENTIFICATIONS									
6										OMEGA 1.4 TEST BN-076-001 RUN 03									
NOISE SOURCE/SUBJECT:										METEOROLOGY:									
(F-106A AIRCRAFT										(TEMP = 33 C									
((J75-P-17 ENGINE)										(BAR PRESS = .760 M HG									
(FAR FIELD NOISE										(REL HUMID = 55 %									
										(PAGE 4									
FREQ	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
(HZ)																			
1/3 OCTAVE																			
25	-13	-12	-11	-10	-12	-12	-10	-9	-10	-10	-8	-6	-4	1	6	7	9	9	6
31.5	-13	-12	-11	-12	-12	-13	-12	-11	-10	-10	-9	-7	-4	0	5	7	9	11	4
40	-14	-11	-10	-11	-10	-11	-11	-11	-11	-10	-10	-7	-4	1	5	8	9	9	1
50	-14	-9	-9	-9	-11	-12	-12	-12	-11	-12	-10	-8	-5	1	5	8	10	7	-4
63	-16	-9	-11	-8	-10	-12	-12	-12	-12	-12	-10	-8	-4	1	5	9	9	7	-11
80	-16	-13	-14	-9	-10	-13	-13	-13	-13	-12	-10	-7	-4	2	6	9	9	5	-9
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125	-14	-11	-13	-12	-12	-13	-13	-13	-11	-10	-9	-7	-3	3	7	7	9	4	-7
160	-17	-12	-14	-14	-13	-14	-14	-14	-11	-11	-9	-7	-3	3	8	7	8	3	-11
200	-16	-14	-15	-15	-13	-14	-13	-14	-11	-11	-9	-6	-4	3	8	7	7	2	-12
250	-15	-13	-14	-14	-13	-14	-12	-12	-8	-8	-6	-5	-1	3	6	8	8	4	-12
315	-14	-11	-11	-11	-11	-11	-9	-10	-7	-7	-6	-3	0	4	7	6	7	2	-15
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500	-13	-12	-11	-11	-10	-9	-8	-8	-3	-3	-2	-1	3	5	6	4	5	0	-19
630	-11	-9	-10	-9	-8	-7	-6	-7	-6	-3	-2	1	3	6	5	2	4	-2	-20
800	-7	-8	-9	-8	-6	-5	-5	-5	-5	-2	-1	1	4	6	4	0	3	-3	-20
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1250	-10	-9	-8	-6	-5	-5	-5	-4	-4	0	0	2	4	5	2	-3	0	-6	-22
1600	-7	-7	-7	-5	-4	-5	-4	-4	-4	1	1	3	5	3	1	-5	-2	-8	-23
2000	-6	-6	-6	-4	-4	-4	-3	-3	-3	2	2	3	4	2	0	-6	-3	-8	-22
3150	-7	-6	-7	-4	-5	-5	-3	-2	-2	2	1	3	5	0	0	-5	-2	-6	-19
4000	-6	-6	-6	-4	-4	-4	-3	-2	-2	2	1	3	4	0	-1	-6	0	-5	-17
5000	-6	-6	-4	-4	-4	-4	-2	-2	-2	2	2	3	4	0	-2	-6	0	-4	-17
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10000	-7	-7	-5	-5	-5	-4	-3	-3	-3	1	2	3	4	0	-2	-3	3	3	-14
OCTAVE																			
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63	-15	-11	-11	-11	-10	-13	-12	-12	-12	-12	-10	-8	-4	1	6	9	9	6	-8
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2000	-8	-7	-7	-5	-5	-5	-4	-3	-3	1	0	3	4	4	1	-5	-2	-8	-22
4000	-6	-7	-6	-4	-5	-4	-3	-2	-3	2	1	3	5	0	-1	-5	-1	-5	-18
6000	-7	-6	-4	-4	-5	-4	-3	-3	-2	1	2	3	4	0	-2	-4	2	0	-15
OVERALL	-14	-11	-12	-11	-11	-11	-10	-10	-7	-6	-4	-1	3	7	7	7	8	4	-9

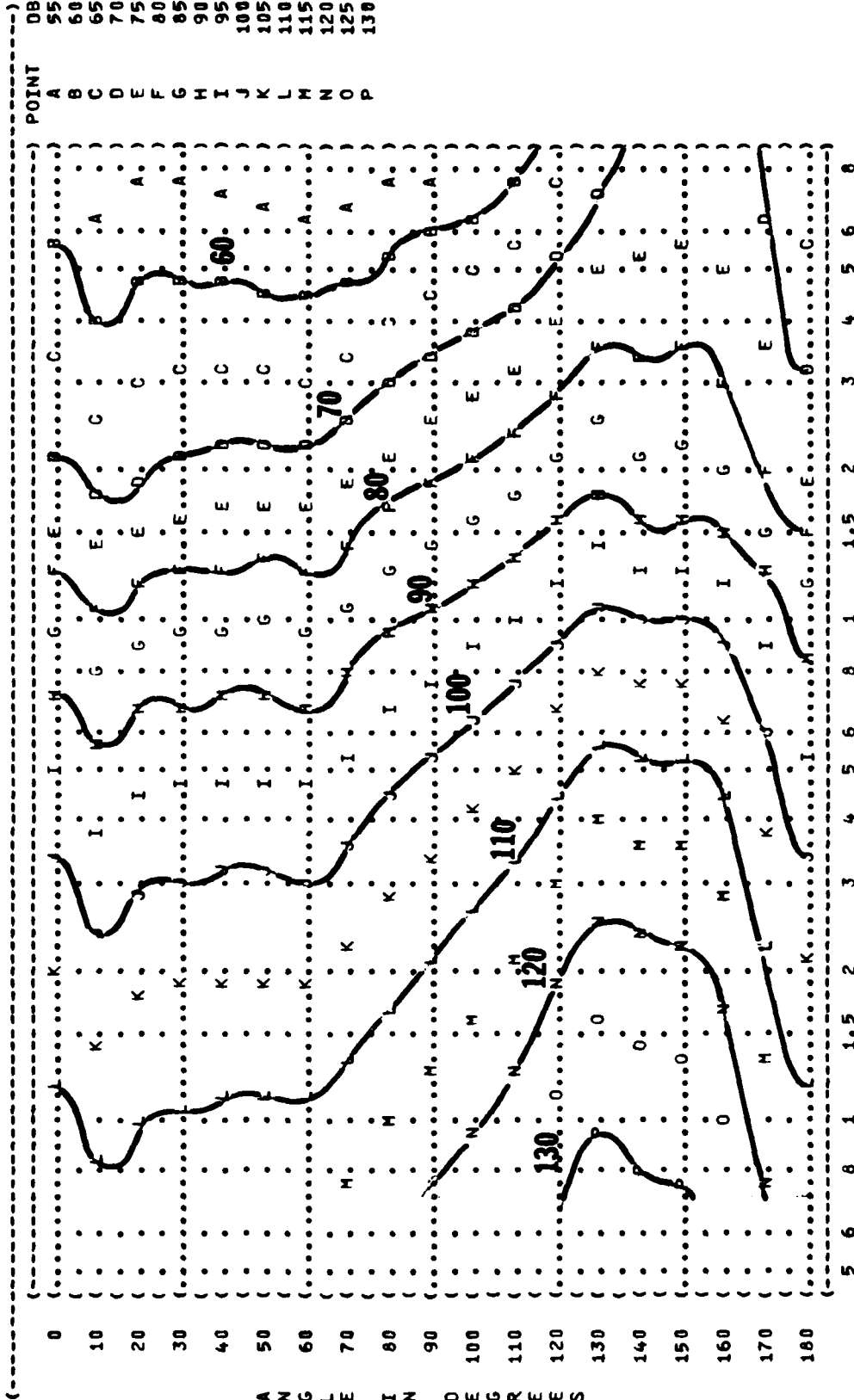
TABLE: DIRECTIVITY INDEX (DB)																
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NOISE SOURCE/SUBJECT:																
(F-106A AIRCRAFT)																
(J75-P-17 ENGINE)																
(FAR FIELD NOISE)																
METEOROLOGY:																
TEMP = 33 C																
BAR PRESS = .760 M HS																
REL HUMID = 55 %																
PAGE 4																
ANGLE (DEGREES)																
FREQ	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
(HZ)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
1/3 OCTAVE																
25	-10	-12	-12	-11	-13	-12	-11	-11	-11	-12	-8	-6	-2	1	4	7
31.5	-10	-12	-10	-11	-12	-11	-12	-10	-10	-8	-7	-7	-3	0	4	8
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80	-13	-15	-13	-12	-10	-14	-15	-14	-14	-14	-12	-9	-4	1	6	9
100	-15	-15	-15	-14	-11	-15	-16	-16	-14	-12	-11	-7	-3	3	6	9
125	-17	-15	-15	-16	-14	-15	-17	-15	-14	-13	-11	-8	-2	5	7	8
160	-17	-15	-16	-17	-16	-15	-17	-16	-16	-13	-11	-7	-3	5	8	6
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250	-21	-19	-18	-19	-18	-17	-18	-17	-15	-13	-11	-7	-4	5	6	10
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500	-17	-16	-14	-14	-13	-13	-14	-13	-12	-9	-7	-4	-3	3	7	8
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10000	-17	-17	-15	-13	-11	-9	-9	-8	-5	0	-7	0	-5	0	8	6
OCTAVE																
31.5	-11	-12	-11	-11	-12	-12	-13	-12	-11	-9	-9	-8	-3	1	4	7
63	-12	-13	-12	-12	-14	-14	-15	-14	-14	-13	-11	-9	-5	1	6	9
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6300	-16	-14	-13	-11	-10	-7	-6	-6	-3	1	-6	1	-6	1	8	5
8000	-15	-14	-12	-10	-9	-7	-6	-5	-2	1	-6	1	-5	1	7	5
10000	-17	-17	-15	-13	-11	-9	-9	-8	-5	0	-7	0	-5	0	8	6
OVERALL	-16	-15	-15	-14	-13	-13	-14	-14	-11	-9	-9	-5	-3	4	7	8

TABLE: DIRECTIVITY INDEX (DB)																	IDENTIFICATION:	
6																	OMEGA 1.4	
																	TEST BN-078-001	
																	PUN 05	
																	25 JAN 82	
																	PAGE 4	

FIGURE: OVERALL SOUND PRESSURE LEVEL (OASPL)
EQUAL LEVEL CONTOURS (DB)

5

IDENTIFICATIONS:
OMEGA 1.4
TEST BN-070-001
RUN 05
METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M Hg
REL HUMID = 70 %
OPERATION:
AFTERBURNER PWR
102% RPM
FREE FLOW
NOISE SOURCE/SUBJECT:
F-106A AIRCRAFT
(J75-P-17 ENGINE)
FAR FIELD NOISE



```
(-----)
( FIGURE: C-WEIGHTED OVERALL SOUND LEVEL (OASLC) ) IDENTIFICATION:
(   6    EQUAL LEVEL CONTOURS (DBC) ) ) ) ) ) )
(-----)
( NOISE SOURCE/SUBJECT: ) METEOROLOGY:
( F-106A AIRCRAFT ) TEMP = 15 C )
( (J75-P-17 ENGINE) ) BAR PRESS = .760 M H2O )
( FAR FIELD NOISE ) REL HUMID = 78 % )
( ) ) PAGE 14 )
(-----)
```

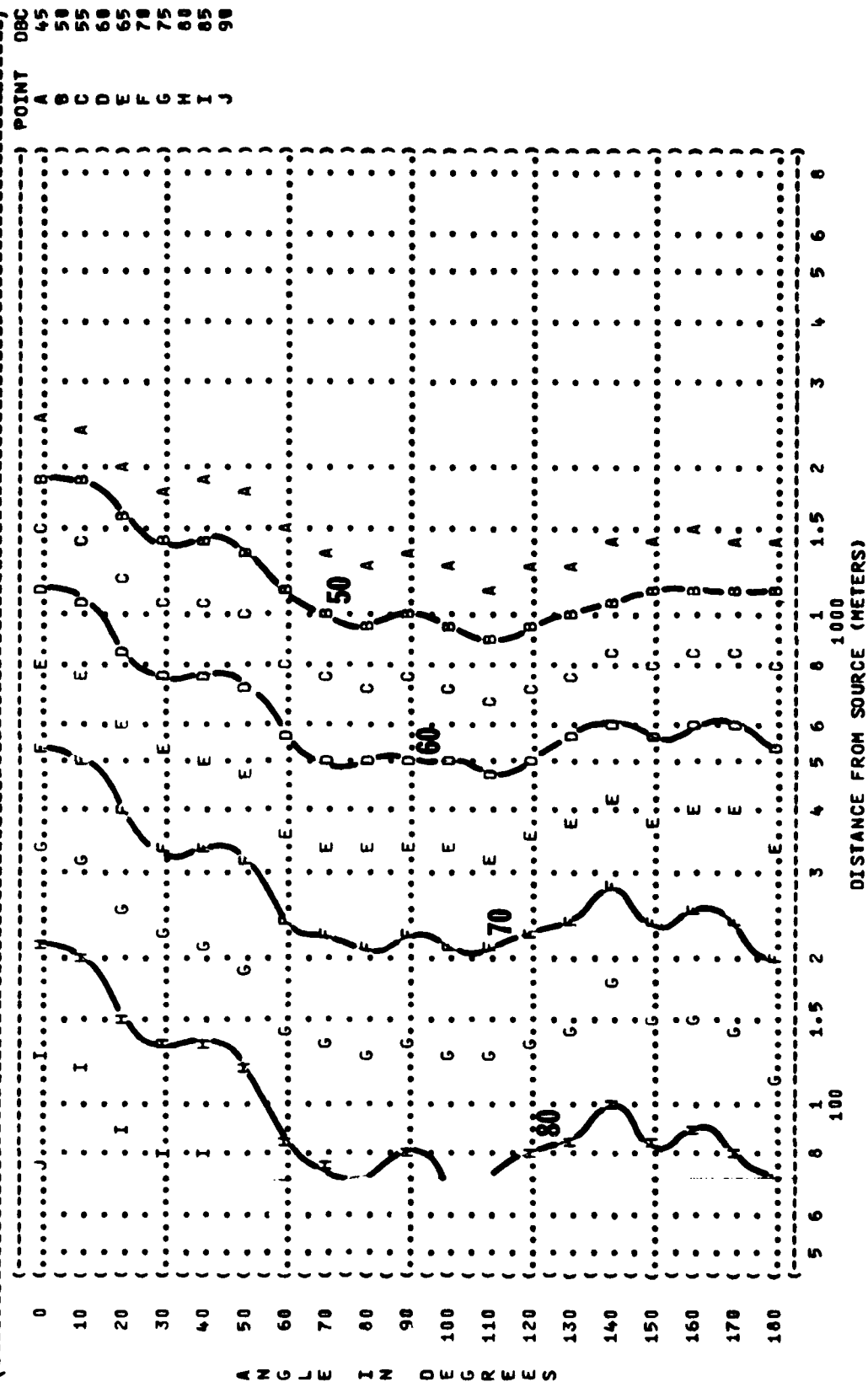


FIGURE: C-WEIGHTED OVERALL SOUND LEVEL (OASLC)
EQUAL LEVEL CONTOURS (DBC)

6

IDENTIFICATION: OMEGA 1.4
TEST BN-078-081
RUN 02
METEOROLOGY: TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %
OPERATION: 85% RPM
FREE FLOW
NOISE SOURCE/SUBJECT: F-106A AIRCRAFT
(J75-P-17 ENGINE)
FAR FIELD NOISE

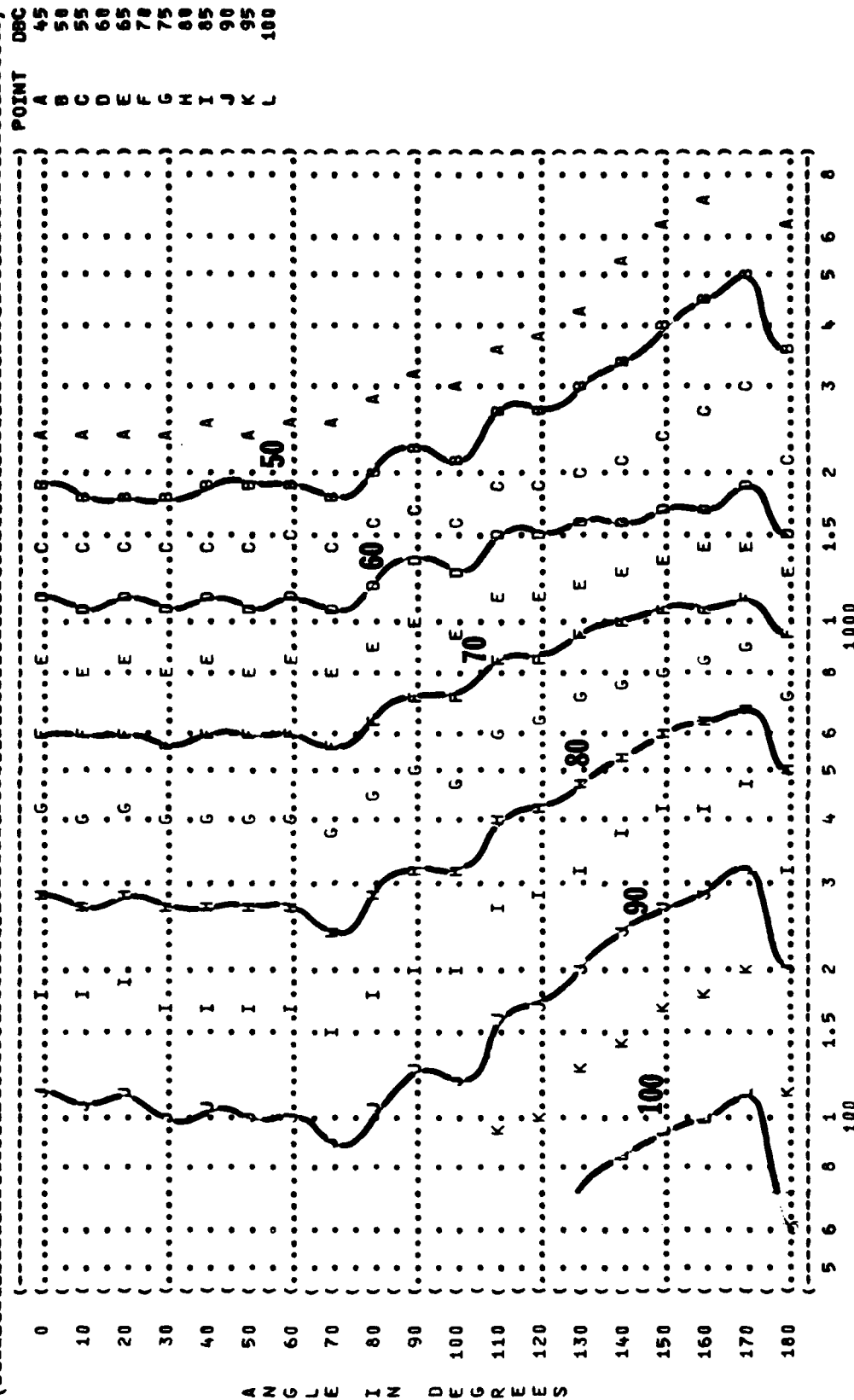


FIGURE 1 C-WEIGHTED OVERALL SOUND LEVEL (OASLC)
EQUAL LEVEL CONTOURS (DBC)

6

IDENTIFICATIONS:
OMEGA 1.4
TEST BN-078-001
RUN 03
METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M Hg
REL HUMID = 70 %
25 JAN 62
PAGE 14

NOISE SOURCE/SUBJECT:
OPERATION:
F-106A AIRCRAFT
95% RPM
FREE FLOW
J75-P-17 ENGINE
FAR FIELD NOISE

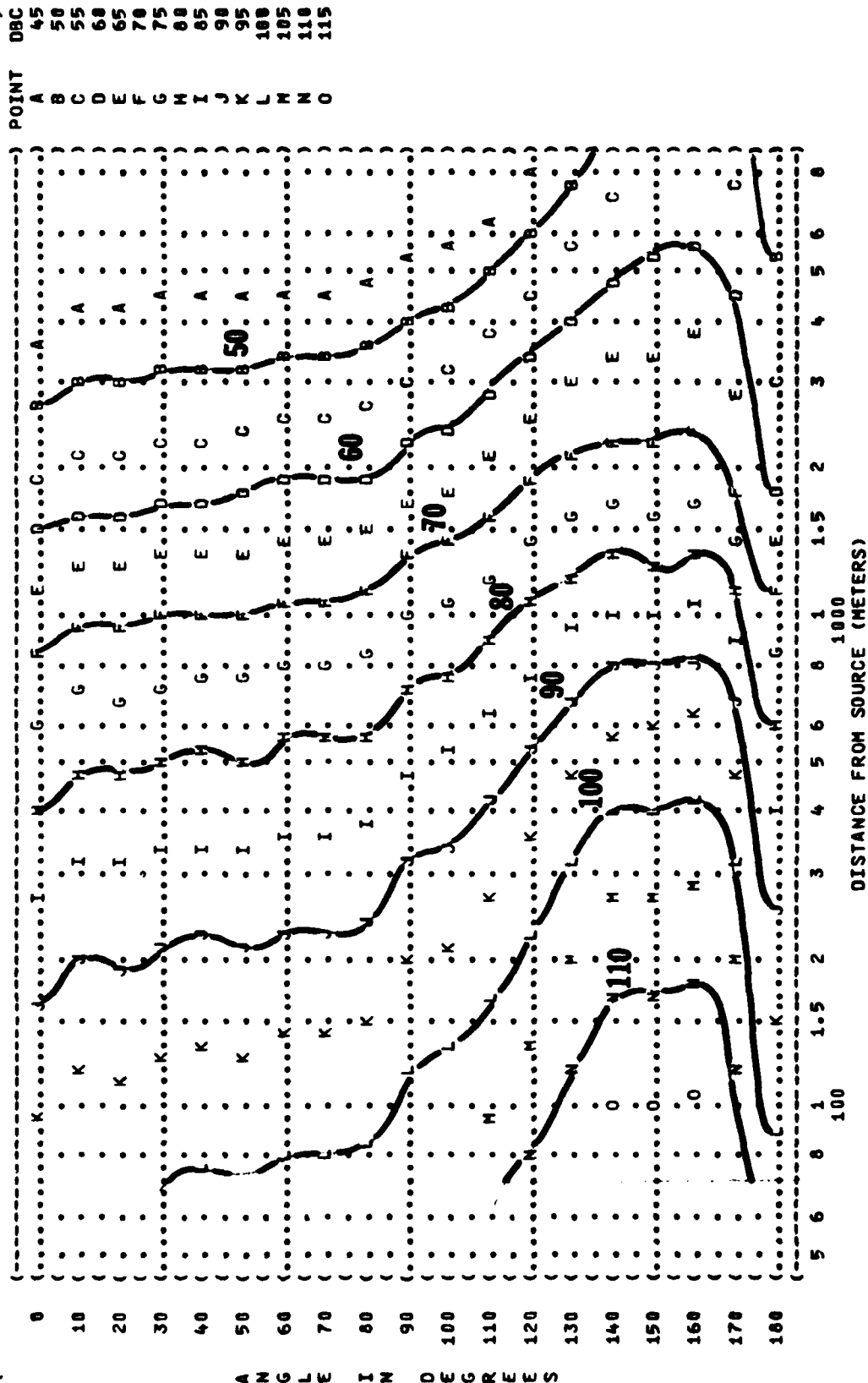


FIGURE 3: C-WEIGHTED OVERALL SOUND LEVEL (OASLC)

) PAGE 14)



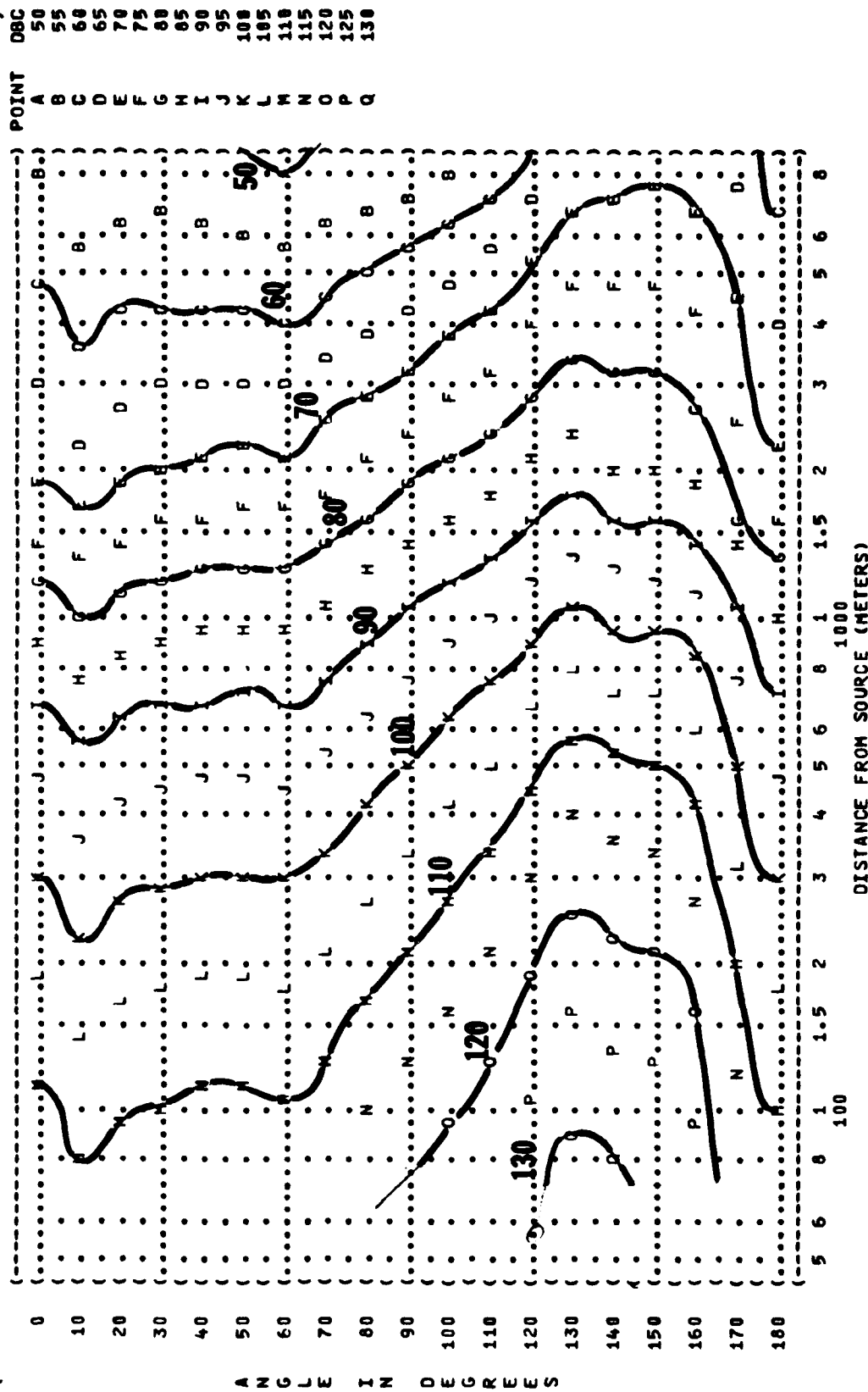
FIGURE: C-WEIGHTED OVERALL SOUND LEVEL (OASLC)
EQUAL LEVEL CONTOURS (DBC)

6

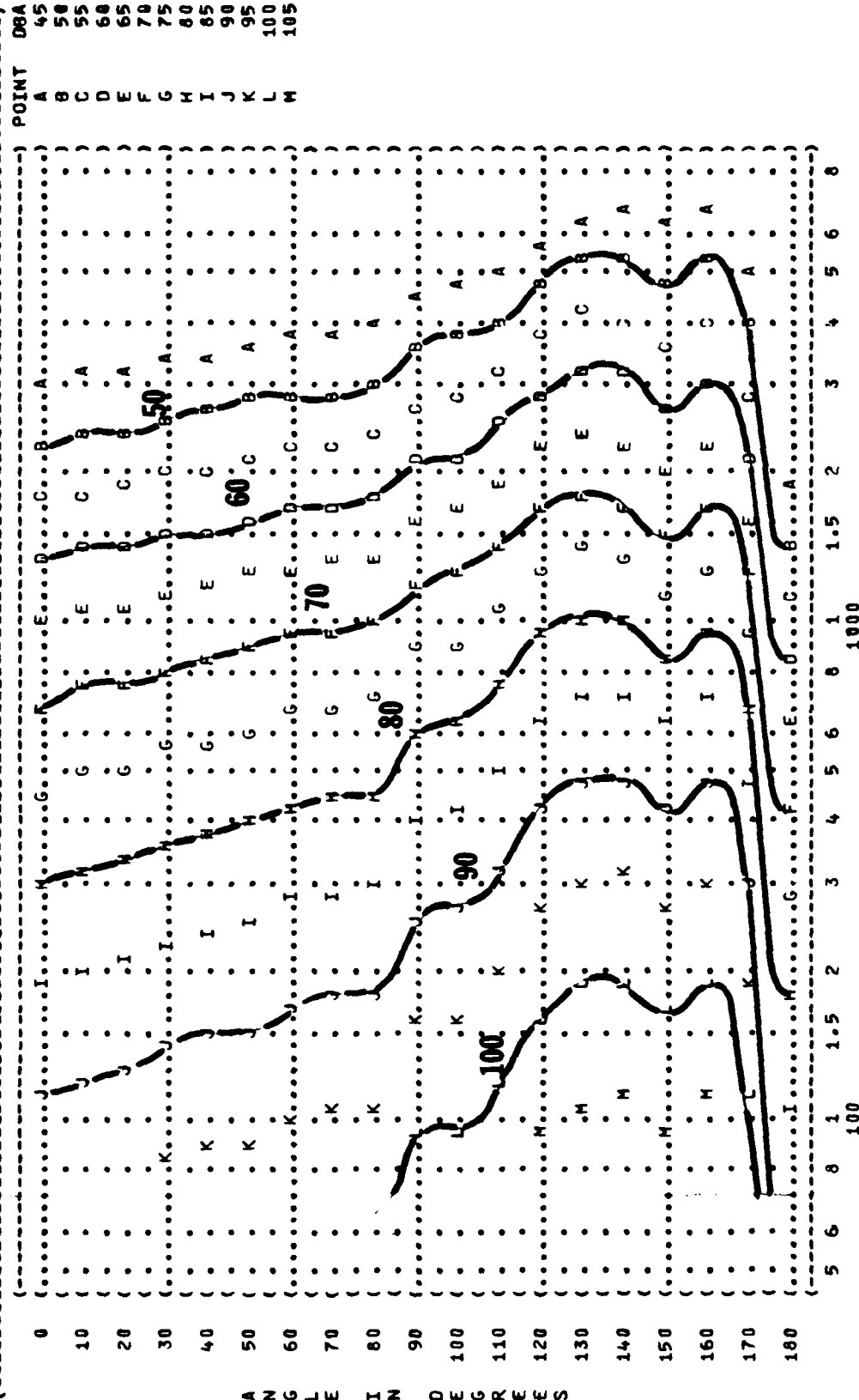
IDENTIFICATION:)
OMEGA 1.4)
TEST BN-070-001)
RUN 05)
METEOROLOGY:)
TEMP = 15 C)
BAR PRESS = .760 M HG)
REL HUMID = 70 %)
PAGE 14)

NOISE SOURCE/SUBJECT:)
OPERATION:)
AFTERBURNER PWR)
102% RPM)
FREE FLOW)

NOISE SOURCE/SUBJECT:)
F-106A AIRCRAFT)
(J75-P-17 ENGINE))
FAR FIELD NOISE)



(FIGURE: A-WEIGHTED OVERALL SOUND LEVEL (OASLA))
 (7 EQUAL LEVEL CONTOURS (DBA))
 () IDENTIFICATION:)
 () OMEGA 1.4)
 (TEST BN-078-001)
 () RUN 03)
 () METEOROLOGY:)
 () TEMP = 15 C)
 () BAR PRESS = .760 M Hg)
 () 25 JAN 82)
 () REL HUMID = 70 %)
 () PAGE 15)
 ()



A N G L E I N D E G R E E S

```

FIGURE: A-WEIGHTED OVERALL SOUND LEVEL {OASLA}
7
EQUAL LEVEL CONTOURS (DBA)

-----
NOISE SOURCE/SUBJECT: ( OPERATIONS: ) METEOROLOGY:
F-106A AIRCRAFT ( MILITARY PWR ) TEMP = 15 C
(J75-P-17 ENGINE) ( 102% RPM ) BAR PRESS = .760 M Hg
FAR FIELD NOISE ( FREE FLOW ) REL HUMID = 70 %
( )
) IDENTIFICATIONS:
) ) OMEGA 1.4
) ) TEST BN-076-001
) ) RUN 04
) ) 25 JAN 62
) ) PAGE 15

```



(FIGURE: A-WEIGHTED OVERALL SOUND LEVEL (OASLA)
 (7 EQUAL LEVEL CONTOURS (DBA)
 (IDENTIFICATIONS:
 () OMEGA 1.4
 () TEST BN-079-001
 () RUN 05
 () METEOROLOGY:
 () TEMP = 15 C
 () BAR PRESS = .760 M Hg
 () 25 JAN 82
 () REL HUMID = 70 %
 () PAGE 15

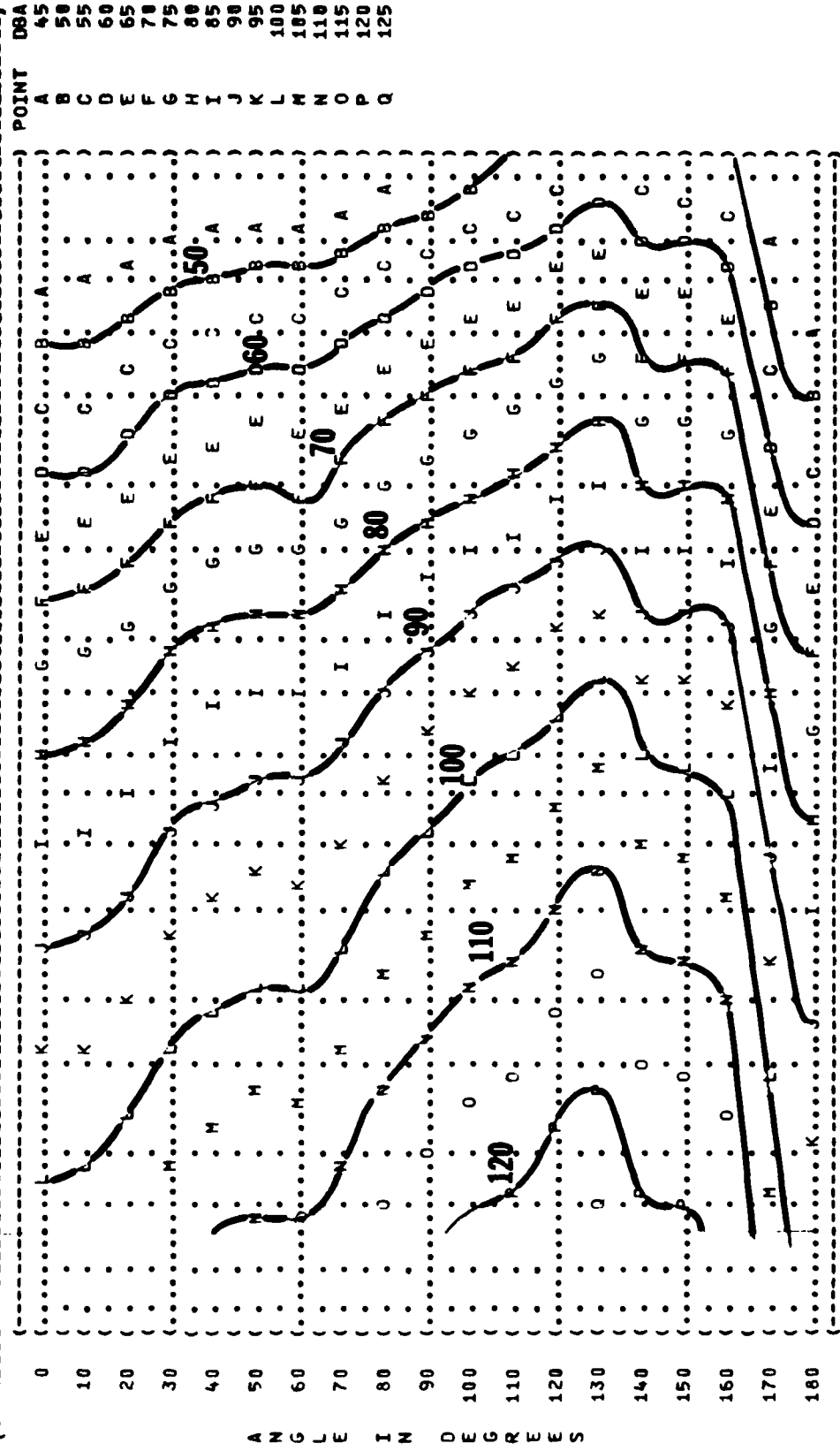
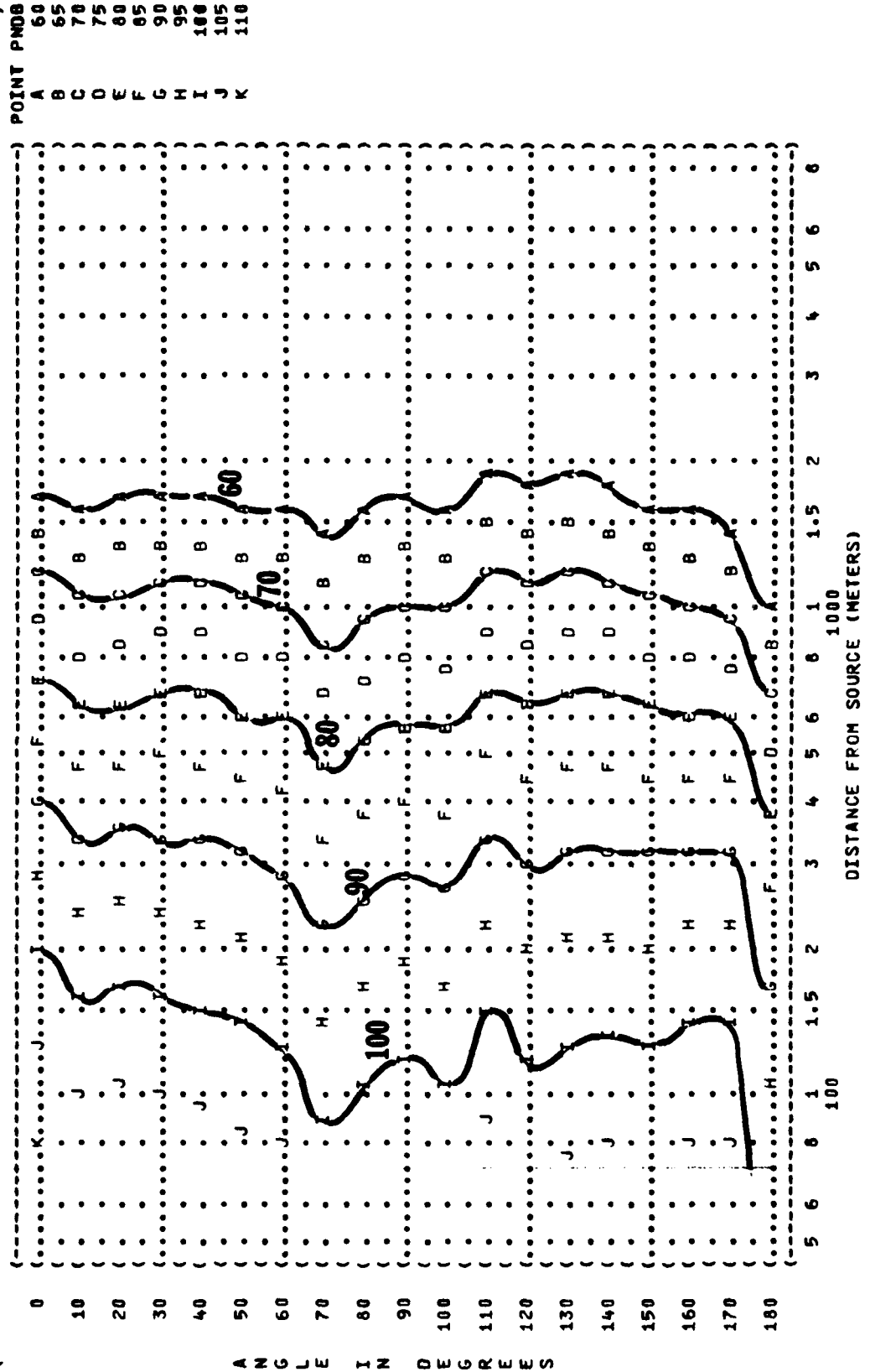


Figure 1 is a line graph showing the dependence of the concentration of the polymer solution on the point of precipitation (PNDB) for various polymers. The y-axis is labeled 'POINT PNDB' and ranges from 0 to 100. The x-axis is labeled 'CONCENTRATION' and ranges from 0 to 40. Four curves are plotted, labeled A, B, C, and D. Curve A is the highest, followed by B, C, and D. All curves show a peak around a concentration of 10-15. Curve A has a label '60' near its peak. Curve B has a label '70' near its peak. Curve C has a label '80' near its peak. Curve D has a label '90' near its peak.



```
(-----)
(( FIGURE: PERCEIVED NOISE LEVEL WITH SMOOTH TONE CORRECTION (PNLT) ) IDENTIFICATION: )
((      8      EQUAL LEVEL CONTOURS (PNDB) ) )
(( ) ) OMEGA 1.4 )
(( ) ) TEST BN-076-001 )
(( ) ) RUN 02 )
(( ) ) )
(( NOISE SOURCE/SUBJECT: ) METEOROLOGY: )
(( F-186A AIRCRAFT ) TEMP = 15 C )
(( (J75-P-17 ENGINE) ) BAR PRESS = .760 M H2 )
(( FAR FIELD NOISE ) REL HUMID = 70 % )
(( ) ) PAGE 16 )
(-----)
```




```

(-----)
( ( FIGURE: PERCEIVED NOISE LEVEL WITH SMOOTH TONE CORRECTION (PNLT) ) IDENTIFICATION: )
( ( 8 ) ) )
( ( ) ) )
( ( ) ) )
( ( ) ) )
( ( ) ) )
( ( NOISE SOURCE/SUBJECT: ) METEOROLOGY: )
( ( F-106A AIRCRAFT ) ) TEMP = 15 C )
( ( (J75-P-17 ENGINE) ) ) BAR PRESS = .760 M Hg )
( ( FAR FIELD NOISE ) ) REL HUMID = 70 % )
( ( ) ) )
( ( ) ) )
(-----)

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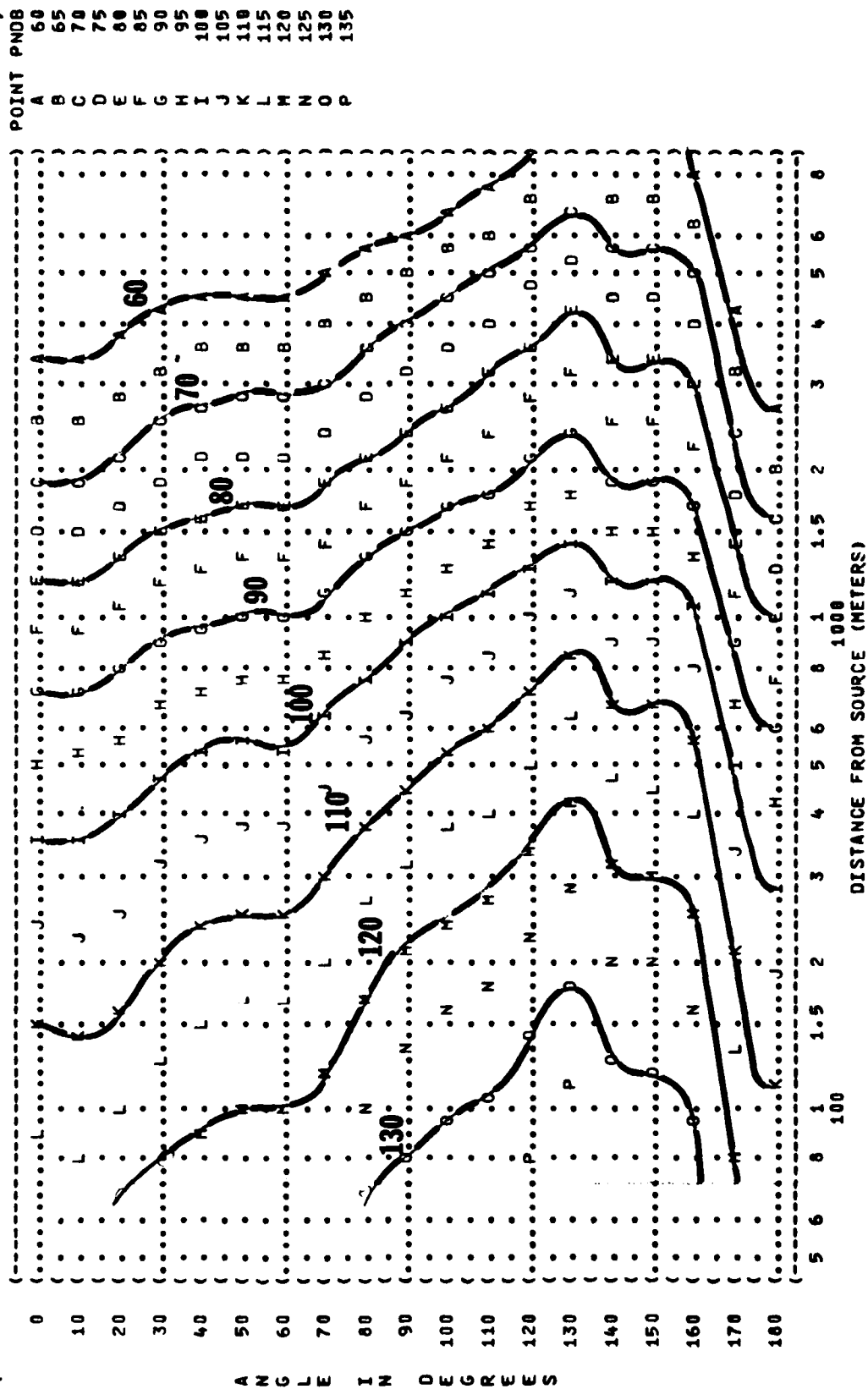


FIGURE: PREFERRED SPEECH INTERFERENCE LEVEL (PSIL)
 EQUAL LEVEL CONTOURS (CB)

IDENTIFICATION:
 OMEGA 1.4
 TEST BN-878-081
 RUN 81

NOISE SOURCE/SUBJECT:
 F-106A AIRCRAFT
 (J75-P-17 ENGINE)
 FAR FIELD NOISE

OPERATION:
 IDLE POWER
 59% RPM
 FREE FLOW

METEOROLOGY:
 TEMP = 15 C
 BAR PRESS = .760 M HG
 REL HUMID = 70 %

25 JAN 82
 PAGE 17

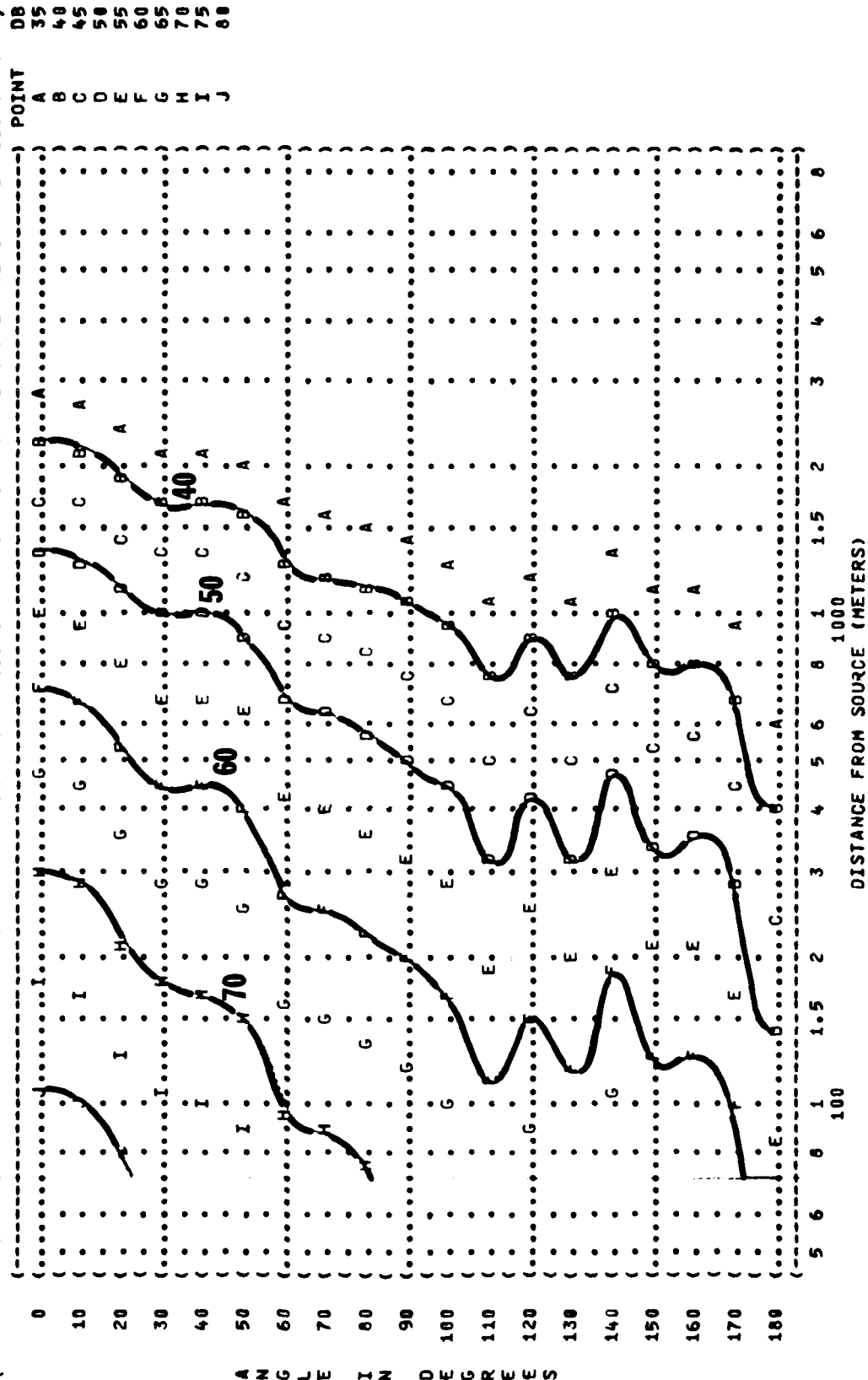


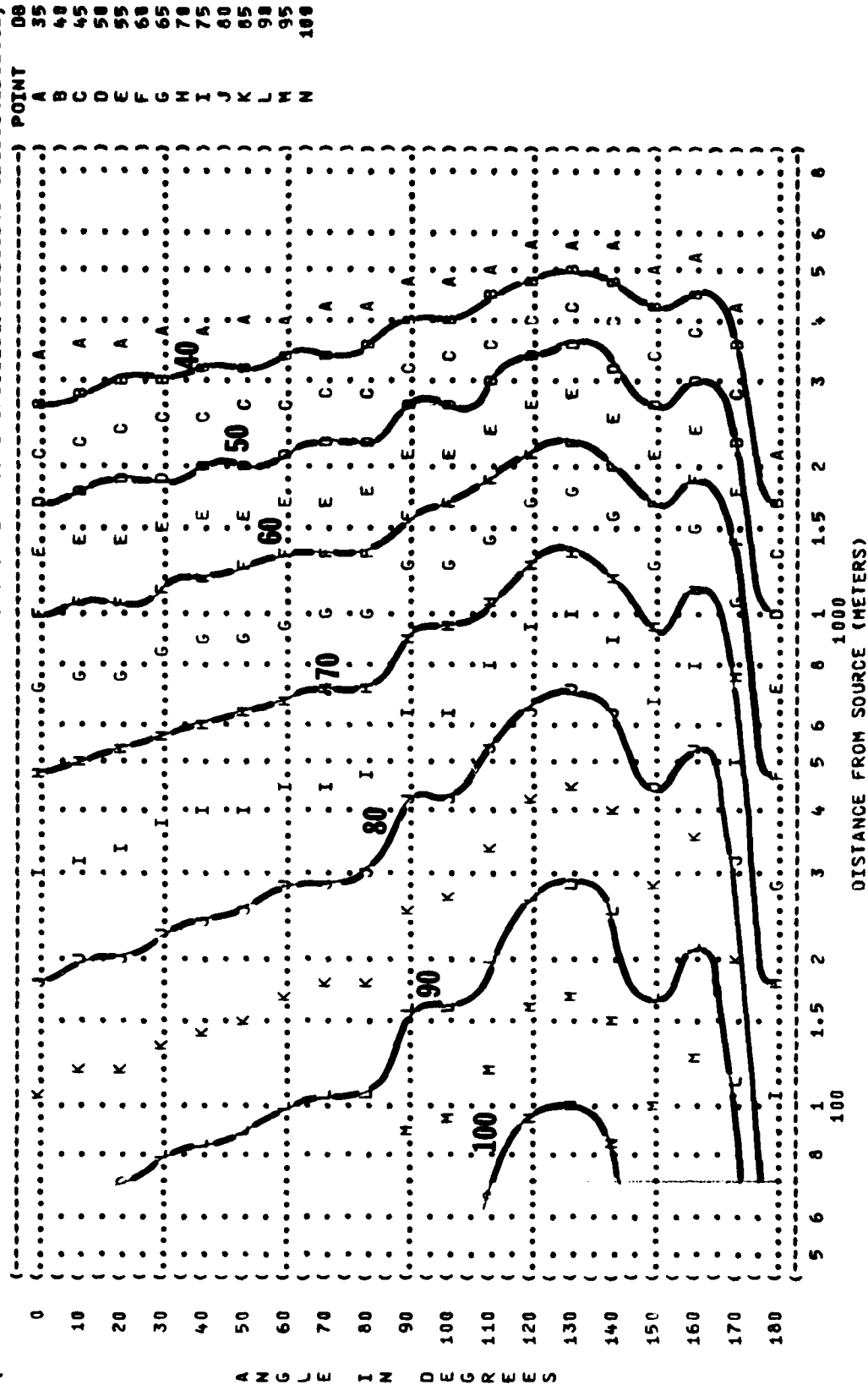
FIGURE: PREFERRED SPEECH INTERFERENCE LEVEL (PSIL)
 9
 EQUAL LEVEL CONTOURS (DB)

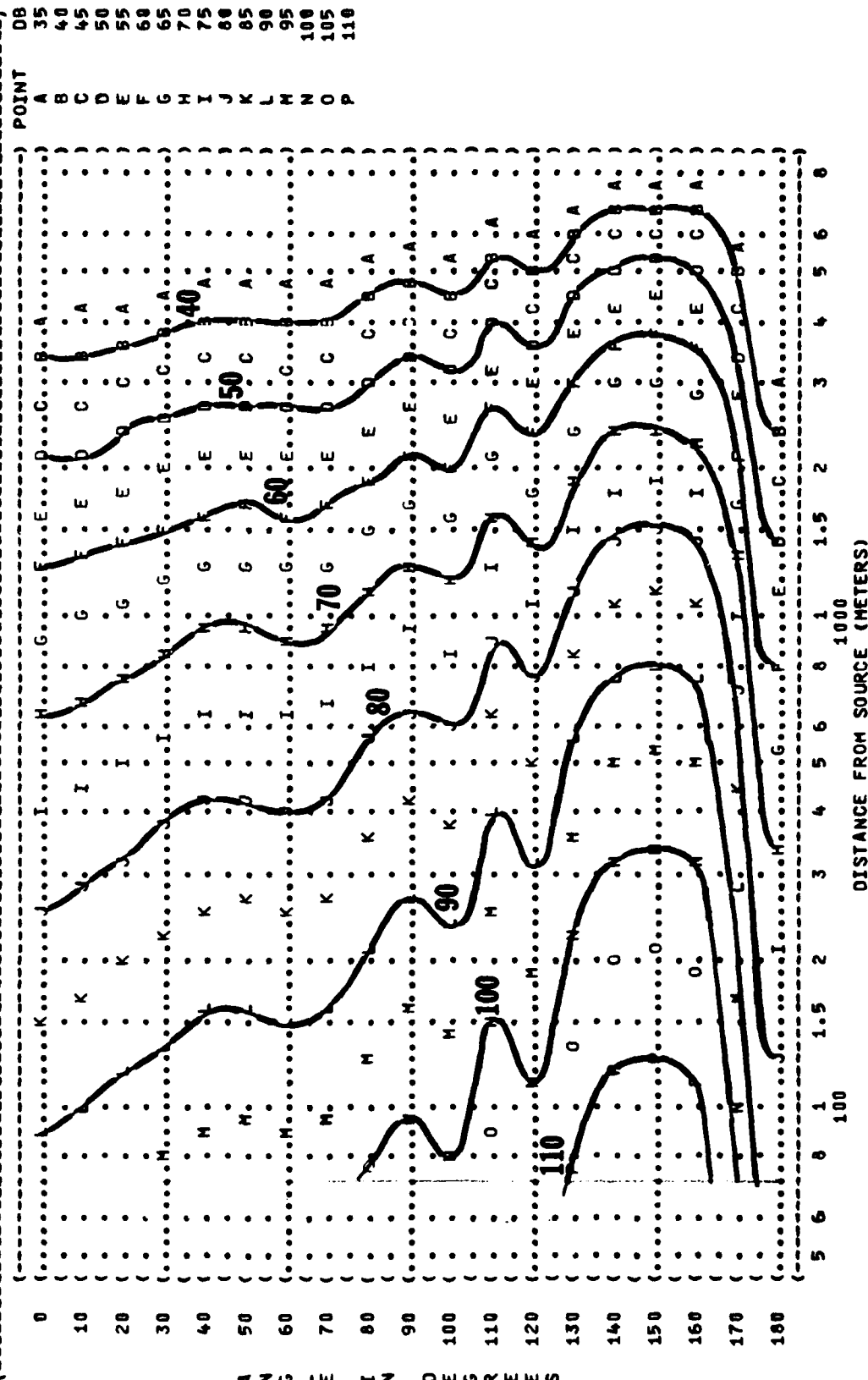
IDENTIFICATIONS:
 OMEGA 1.4
 TEST 8N-878-081
 RUN 03
 25 JAN 62
 PAGE 17

METEOLOGY:
 TEMP = 15 C
 BAR PRESS = .760 M HG
 REL HUMID = 70 %

OPERATION:
 95% RPM
 FREE FLOW

NOISE SOURCE/SUBJECT:
 F-106A AIRCRAFT
 (J75-P-17 ENGINE)
 FAR FIELD NOISE





◀ Z U J W H Z D W U X W W V

FIGURE: PREFERRED SPEECH INTERFERENCE LEVEL (PSIL)
EQUAL LEVEL CONTOURS (DB)

9

IDENTIFICATION:

OMEGA 1.4
TEST BN-076-001

RUN 05

METEOROLOGY:

TEMP = 15 C

BAR PRESS = .760 M HG

REL HUMID = 70 %

OPERATION:

AFTERBURNER PWR

102% RPM

FREE FLOW

NOISE SOURCE/SUBJECT:

F-106A AIRCRAFT

(J75-P-17 ENGINE)

FAR FIELD NOISE

PAGE 17

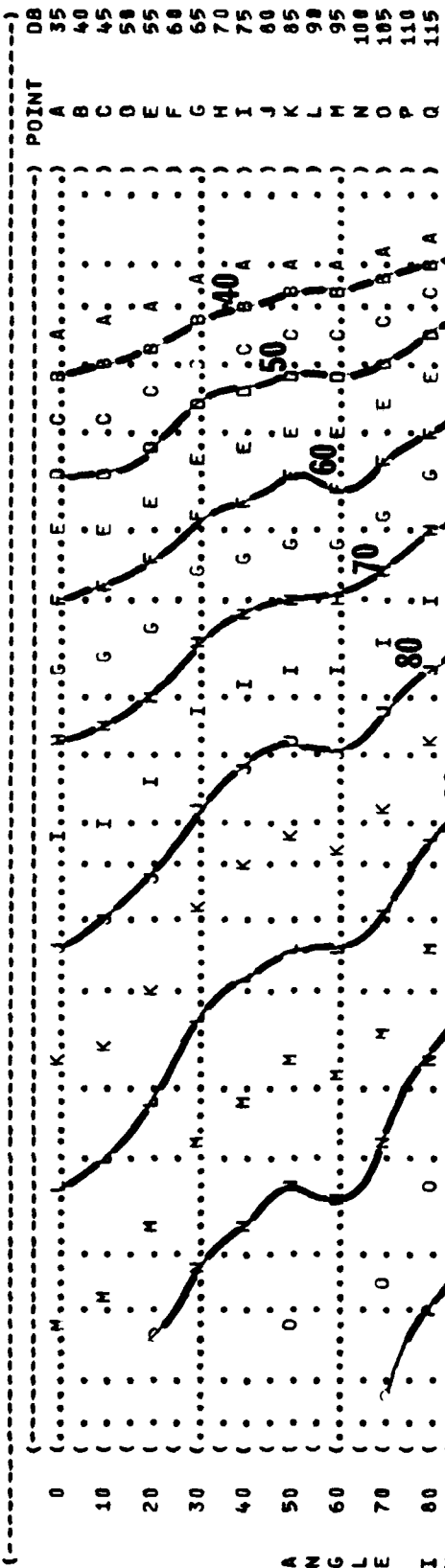


FIGURE: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)

IDENTIFICATIONS:

10

EQUAL TIME CONTOURS (MINUTES)

NO PROTECTION

OMEGA 1.4

TEST BN-070-001

RUN 01

25 JAN 82

PAGE 7

NOISE SOURCE/SUBJECT:

F-106A AIRCRAFT

(J75-P-17 ENGINE)

FAR FIELD NOISE

OPERATIONS:

IDLE POWER

59% RPM

FREE FLOW

METEOROLOGY:

TEMP = 15 C

BAR PRESS = .760 M HG

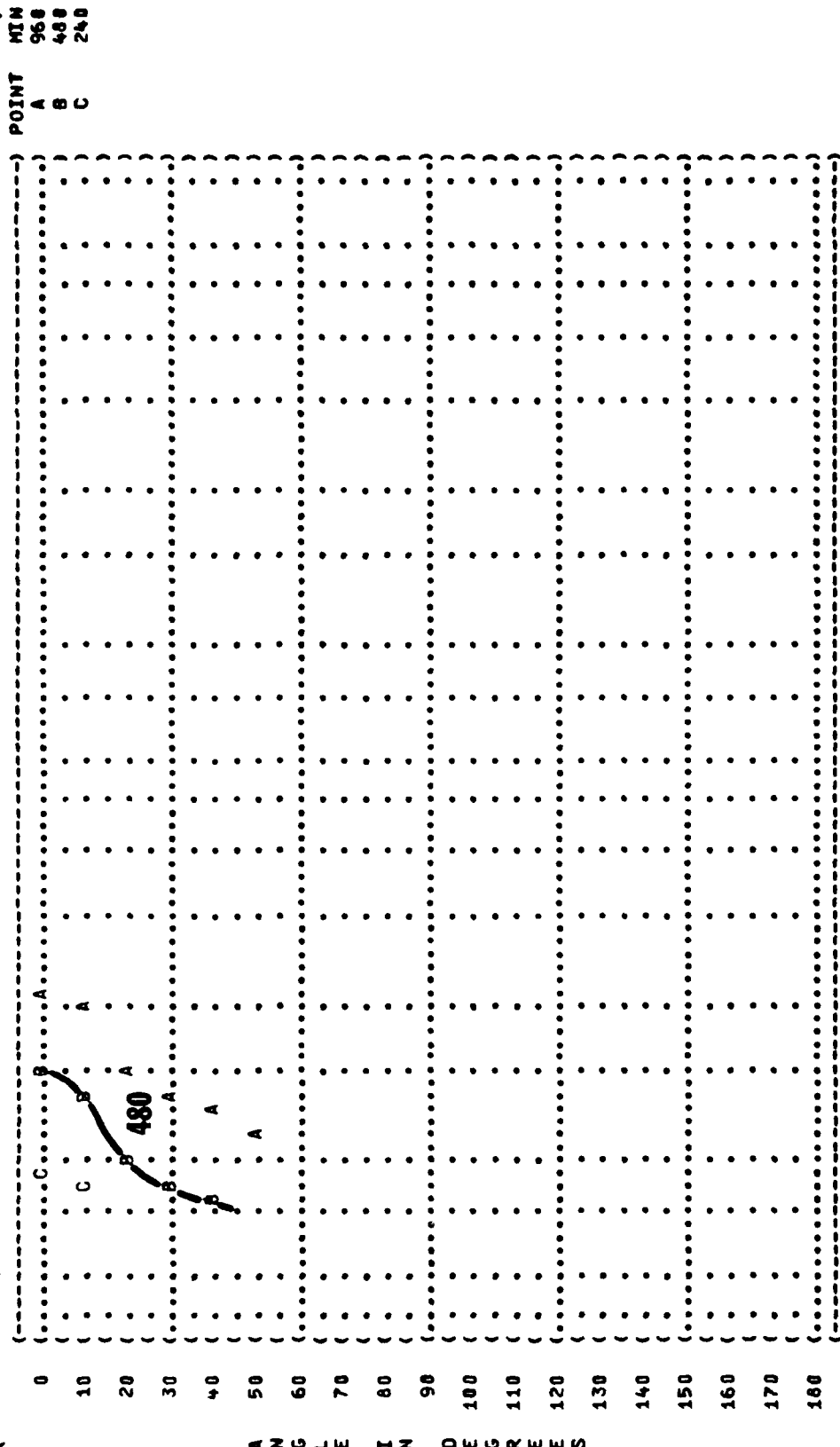
REL HUMID = 70 %

POINT MIN

A 968

B 480

C 240



A N G L E I N D E G R E E S

FIGURE: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)

10

EQUAL TIME CONTOURS (MINUTES)

() NOISE SOURCE/SUBJECT: () OPERATION: () METEOROLOGY: () IDENTIFICATION:

() F-106A AIRCRAFT () IDLE POWER () TEMP = 15 C () OMEGA 1.4

() (J75-P-17 ENGINE) () 59% RPM () BAR PRESS = .760 M HG () TEST BN-078-001

() FAR FIELD NOISE () FREE FLOW () REL HUMID = 70 % () RUN 01

() () () () 25 JAN 82

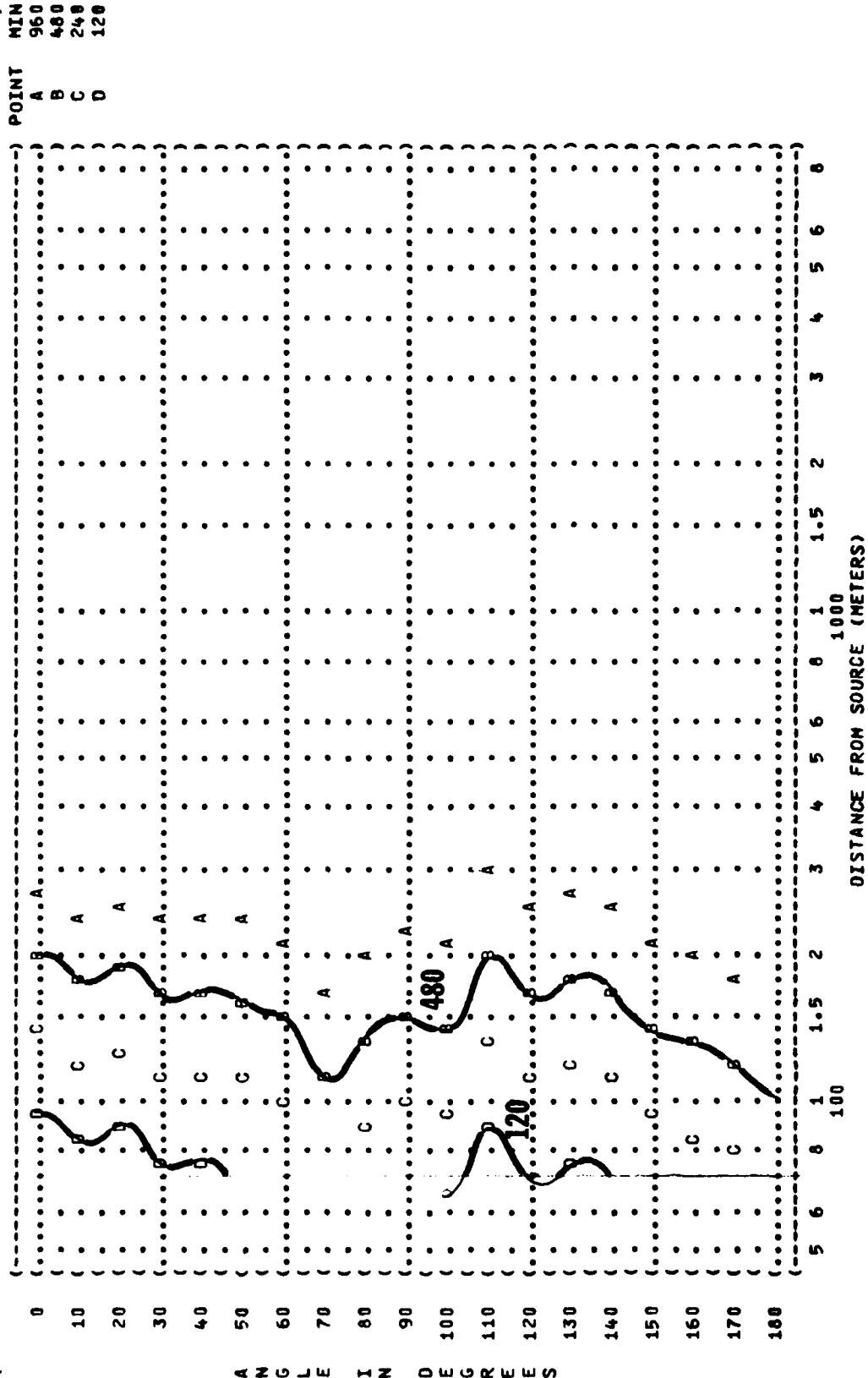
() () () () PAGE 8

PERSONNEL MAY BE EXPOSED UP TO 960 MINUTES PER DAY
AT ALL DISTANCES FROM SOURCE EQUAL TO OR GREATER THAN 75 METERS
FOR ALL ANGLES EVALUATED (INDICATED BY < AT LEFT)
UNDER THE FOLLOWING EAR PROTECTION CONDITIONS:

MINIMUM QPL EAR MUFFS
AMERICAN OPTICAL 1700 EAR MUFFS
V-51R EAR PLUGS
COMFIT TRIPLE FLANGE EAR PLUGS
H-133 GROUND COMMUNICATION UNIT

(-----)

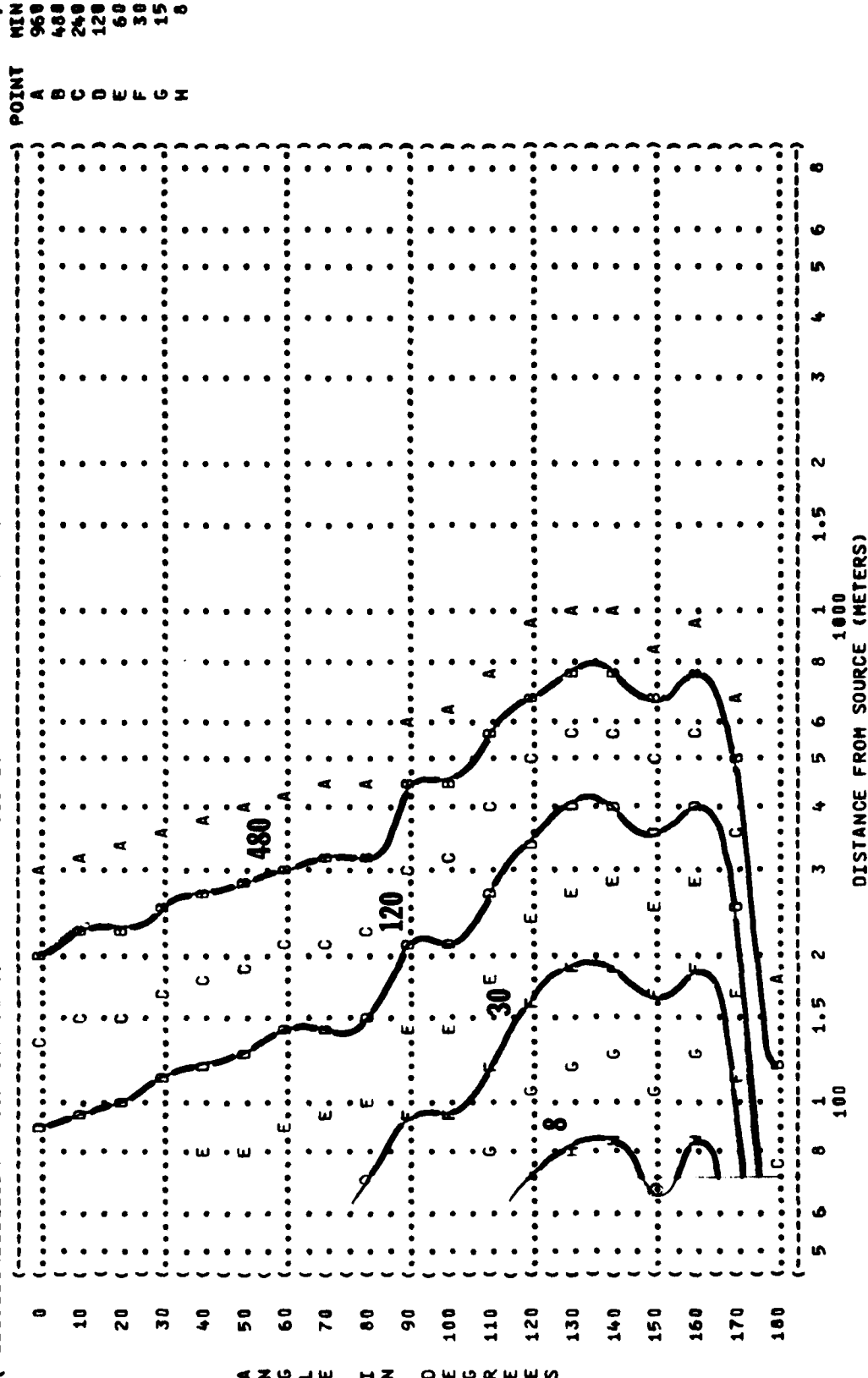
100										1000									
5	6	8	1	1.5	2	3	4	5	6	8	1	1.5	2	3	4	5	6	8	
DISTANCE FROM SOURCE (METERS)																			

[illegible]

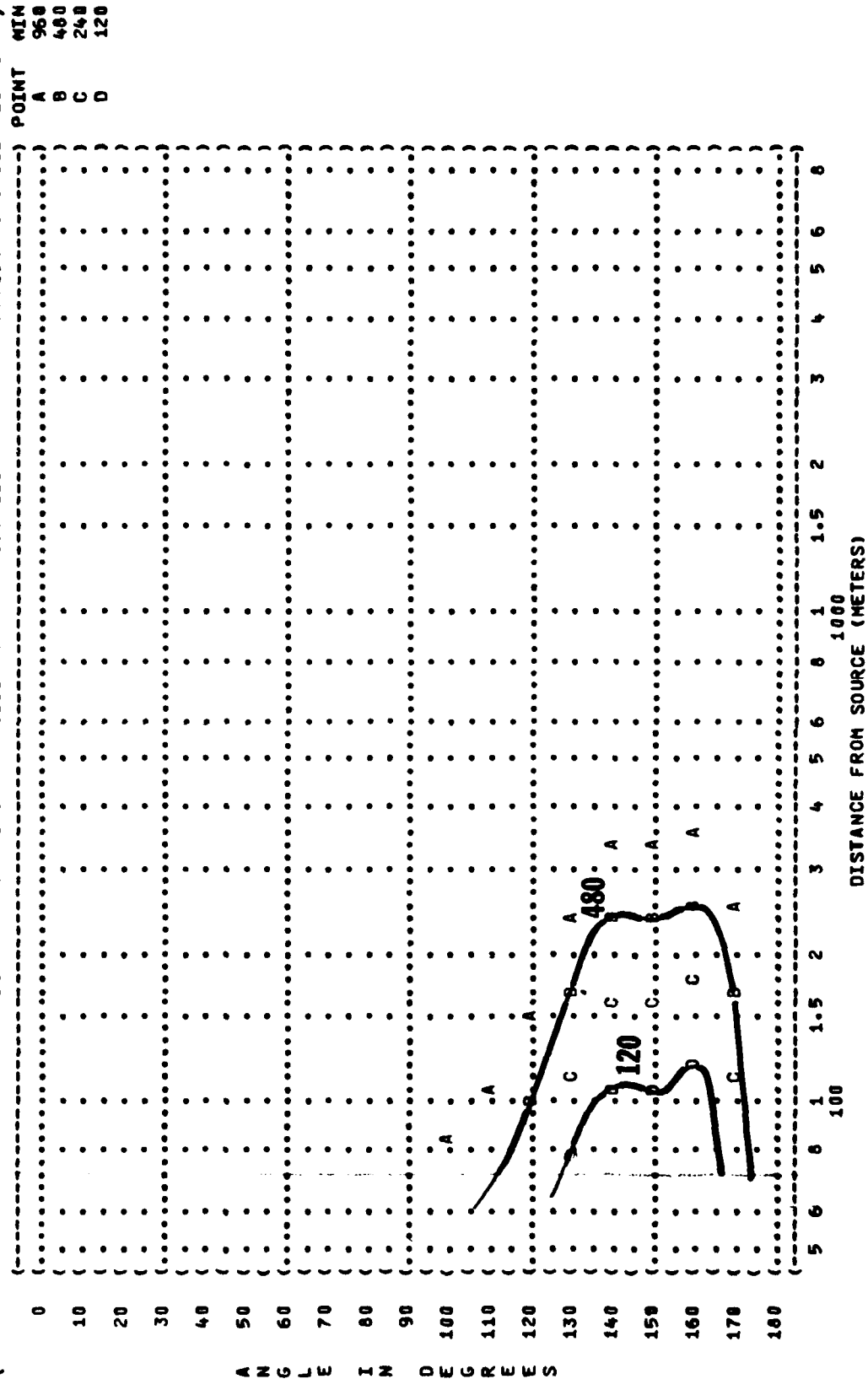
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DISTANCE FROM SOURCE (METERS)

FIGURE: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73) IDENTIFICATIONS:
 10 EQUAL TIME CONTOURS (MINUTES)
 NO PROTECTION
 NOISE SOURCE/SUBJECT: OPERATION: METEOROLOGY: TEMPERATURE = 15 C
 F-106A AIRCRAFT 95% RPM
 (J75-P-17 ENGINE) FREE FLOW BAR PRESS = .760 M HG
 FAR FIELD NOISE REL HUMID = 70 %
 TEST BN-070-001
 RUN 03
 25 JAN 82
 PAGE 7



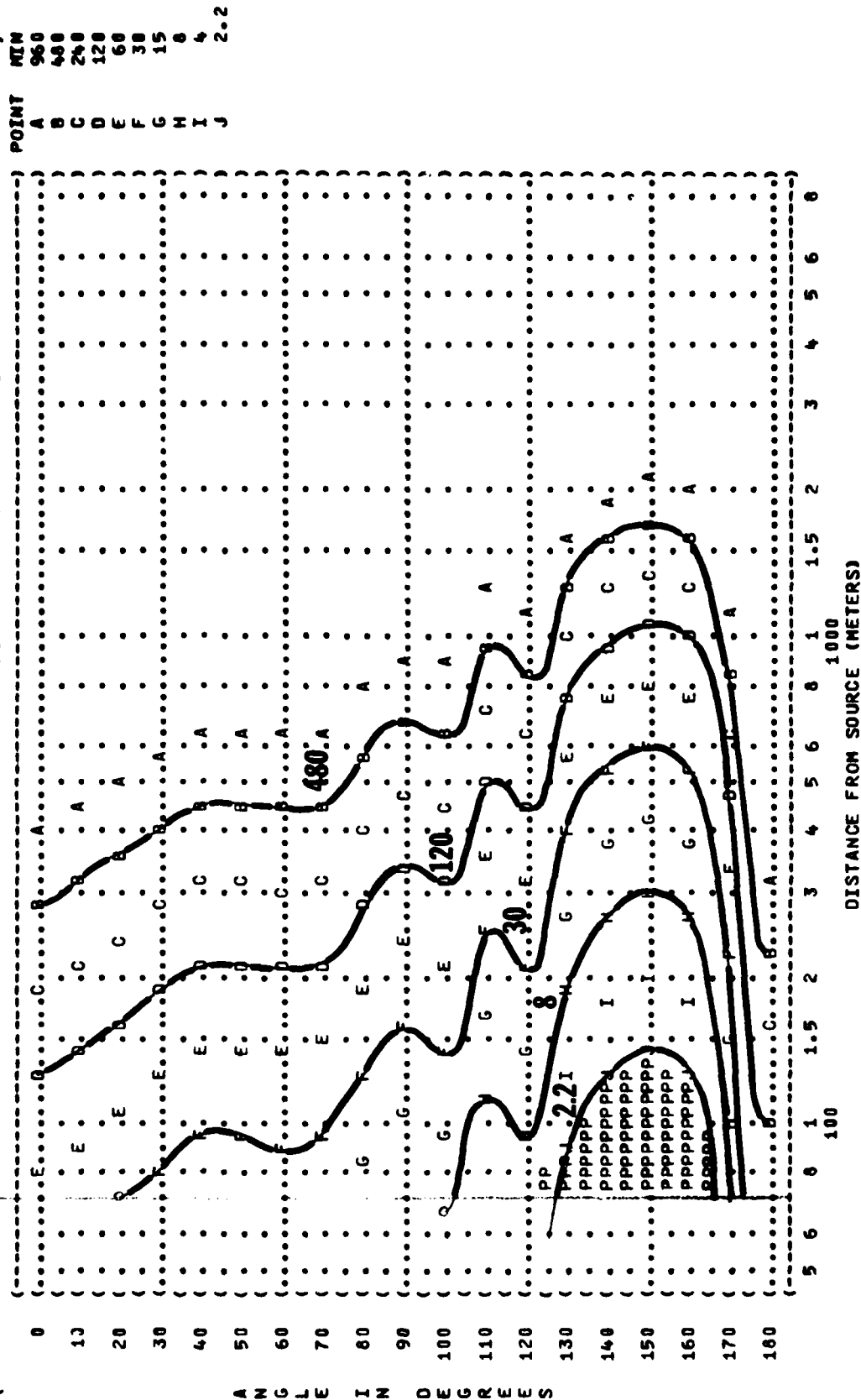

```
(-----)
( FIGURE: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73) ) IDENTIFICATION:
( EQUAL TIME CONTOURS (MINUTES) ) ,
( MINIMUM QPL EAR MUFFS ) OMEGA 1.4
( NOISE SOURCE/SUBJECT: ) TEST 8N-078-001
( F-106A AIRCRAFT ) OPERATION: METEOROLOGY: RUN 03
( (J75-P-17 ENGINE) ) 95% RPM TEMP = 15 C
( FAR FIELD NOISE ) FREE FLOW BAR PRESS = .760 M HG
( ) REL HUMID = 70 %
( ) PAGE 8
(-----)
```



	MIN	POINT
0	950	A
10	480	B
	240	C

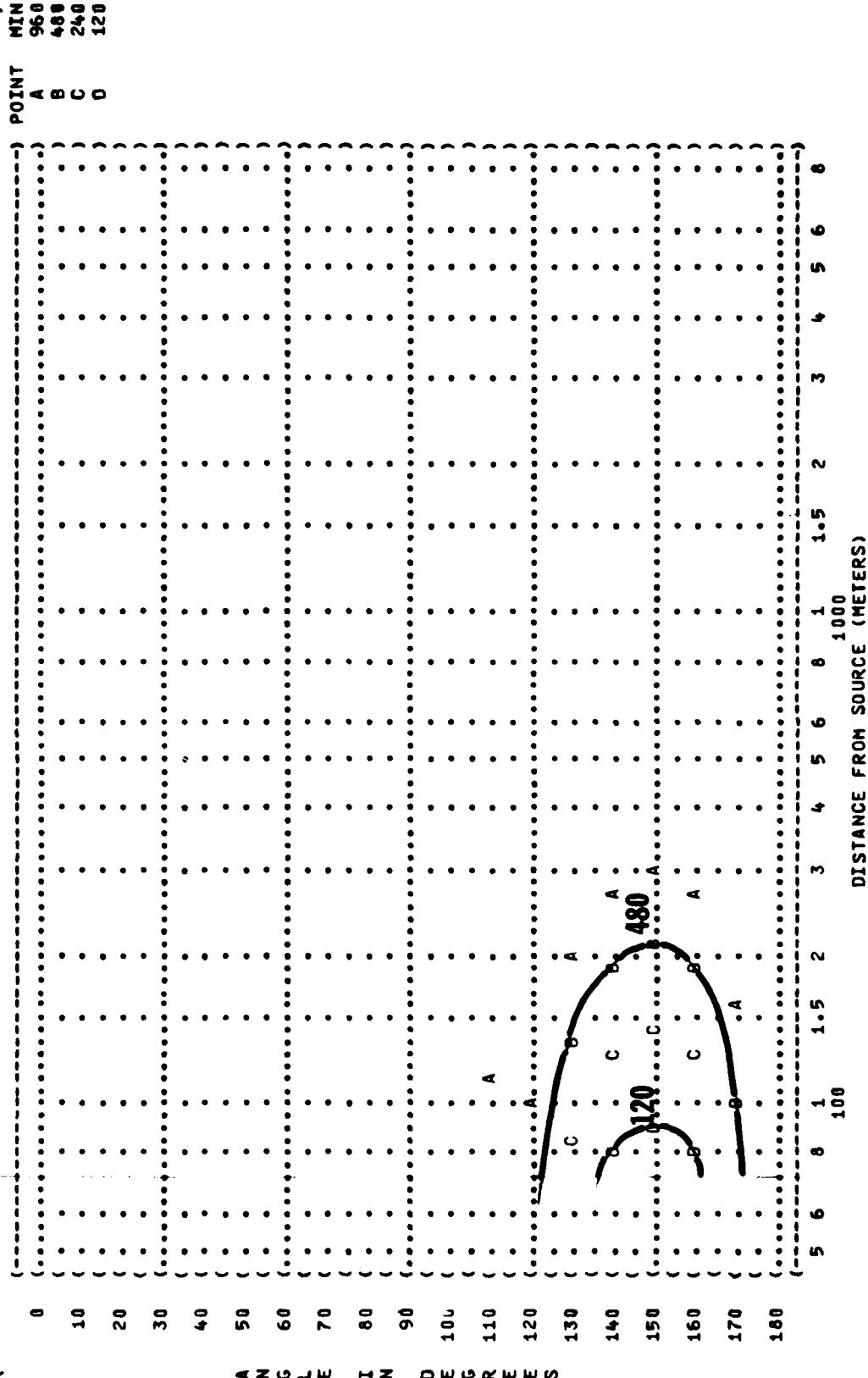


FIGURE: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73) IDENTIFICATIONS:)
 () EQUAL TIME CONTOURS (MINUTES))
 () NO PROTECTION)
 () OMEGA 1.4)
 () TEST BN-070-001)
 () RUN 04)
 () METEOROLOGY:)
 () TEMP = 15 C)
 () BAR PRESS = .760 M HG)
 () REL HUMID = 70 %)
 () 25 JAN 02)
 () PAGE 7)

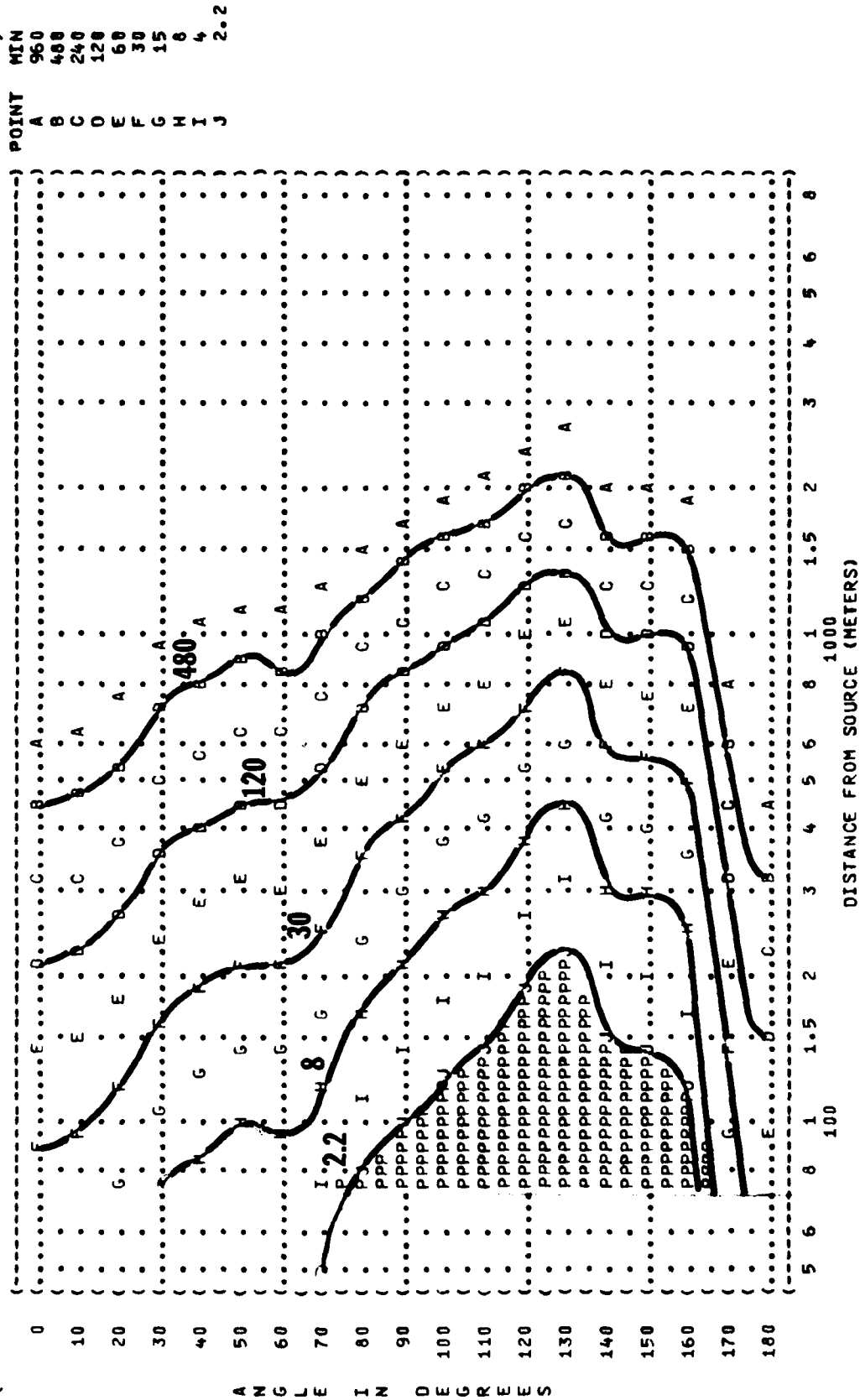


P ADDITIONAL EAR PROTECTION REQUIRED.

() FIGURE: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)) IDENTIFICATION:)
 () EQUAL TIME CONTOURS (MINUTES))
 () **10** H-133 GROUND COMMUNICATION UNIT) OMEGA 1.4
 ()) TEST BN-078-001)
 () NOISE SOURCE/SUBJECT: (OPERATION:) METEOROLOGY:) RUN 04)
 () F-106A AIRCRAFT (MILITARY PMR) TEMP = 15 C)
 () (J75-P-17 ENGINE) (102% RPM) BAR PRESS = .760 M HG) 25 JAN 82)
 () FAR FIELD NOISE (FREE FLOW) REL HUMID = 70 %)
 ()) PAGE 12)



```
(-----)
( ( FIGURE: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73) ) IDENTIFICATION: )
( ( EQUAL TIME CONTOURS (MINUTES) ) ) )
( ( NO PROTECTION ) ) )
(-----)
( ( NOISE SOURCE/SUBJECT: ) METEOROLOGY: ) )
( ( F-106A AIRCRAFT ) TEMP = 15 C ) )
( ( (J75-P-17 ENGINE) ) BAR PRESS = .760 M HG ) )
( ( FAR FIELD NOISE ) REL HUMID = 70 % ) )
( ( ) ) PAGE 7 )
(-----)
```



P ADDITIONAL EAR PROTECTION REQUIRED.

FIGURE: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)
EQUAL TIME CONTOURS (MINUTES)
CONFIT TRIPLE FLANGE EAR PLUGS

IDENTIFICATIONS:
OMEGA 1.4

```

NOISE SOURCE/SUBJECT:
F-106A AIRCRAFT
(J75-P-17 ENGINE)
FAR FIELD NOISE

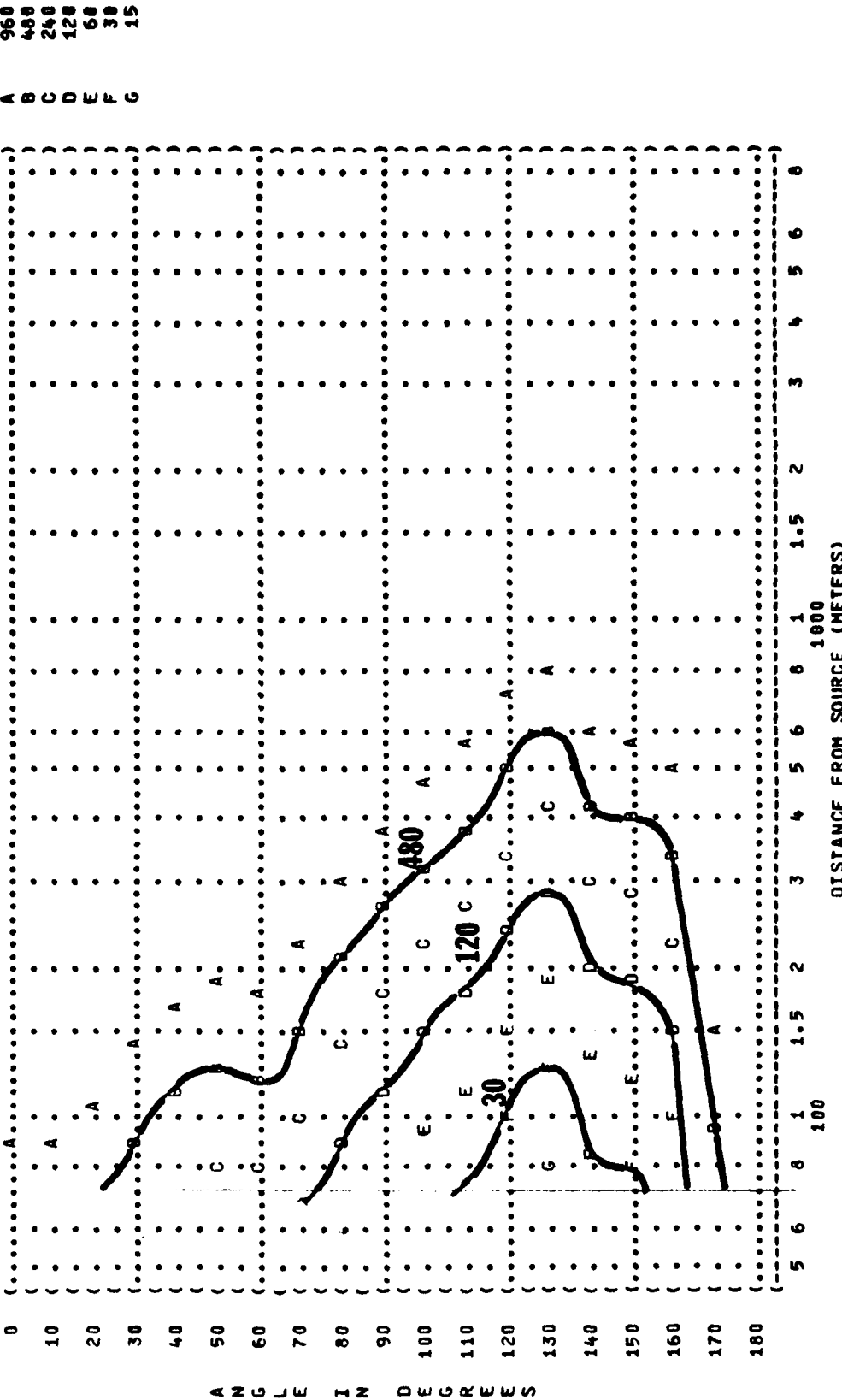
( OPERATION:
( AFTERBURNER PWR
( 102% RPM
( FREE FLOW
(

) METEOROLOGY:
) TEMP = 15 C
) BAR PRESS = .760 M H3
) REL HUMID = 70 %
)

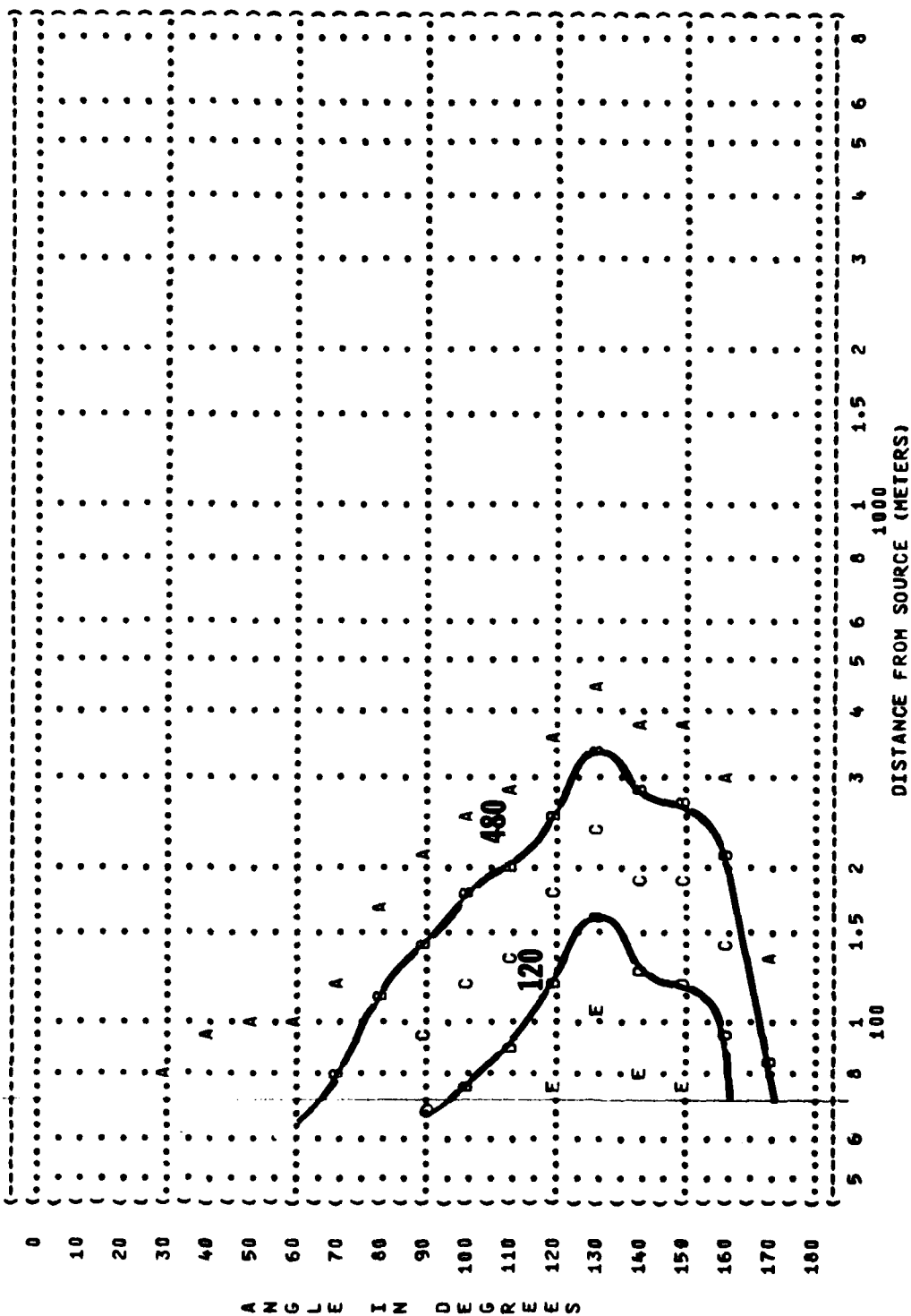
) RUN 85
TEST 8N-078-080
25 JAN 82
PAGE 11

```

(-----) POINT (-----)



POINT	MIN
A	960
B	480
C	240
D	120
E	60



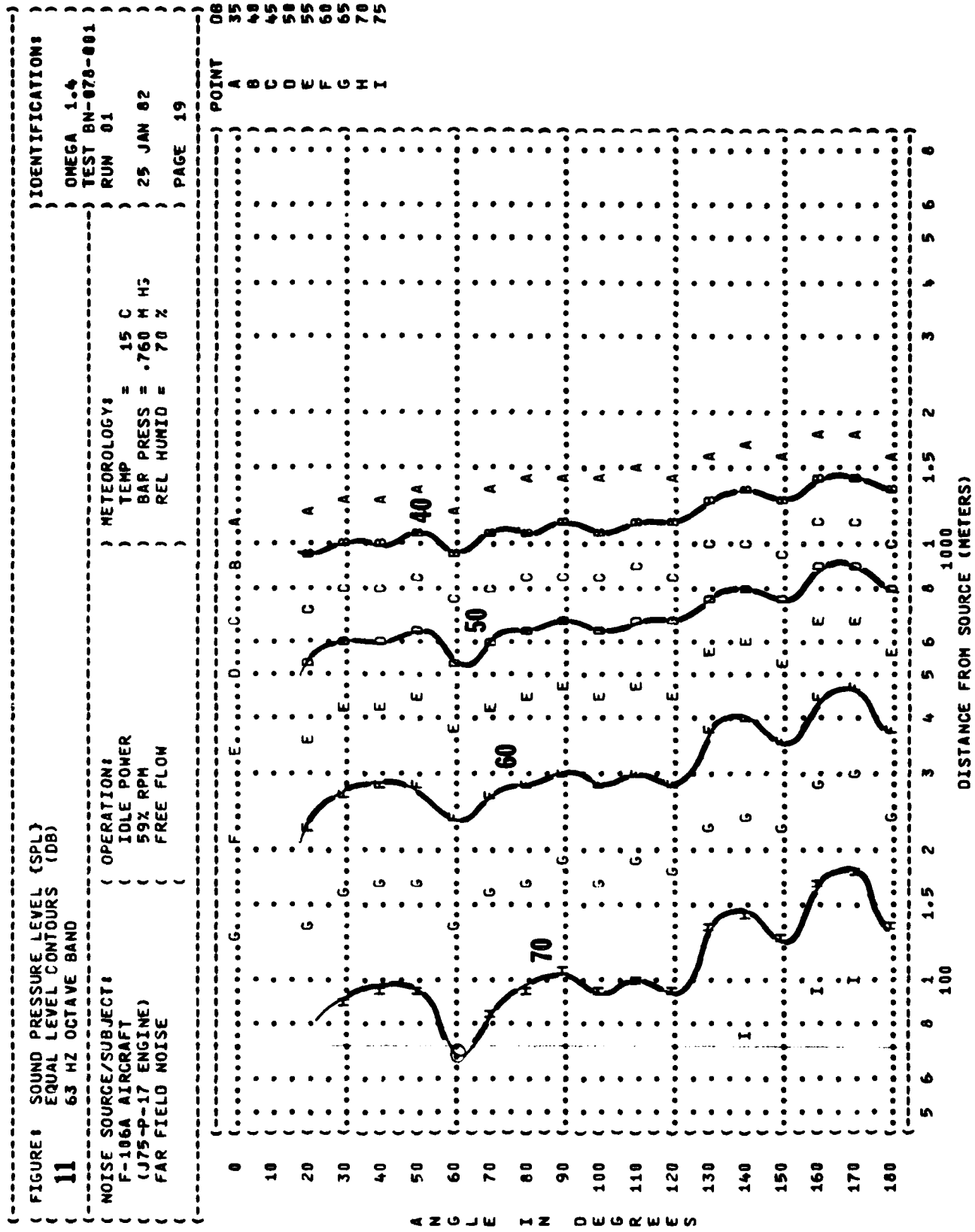


FIGURE: SOUND PRESSURE LEVEL (SPL)
EQUAL LEVEL CONTOURS (DB)
11 125 HZ OCTAVE BAND

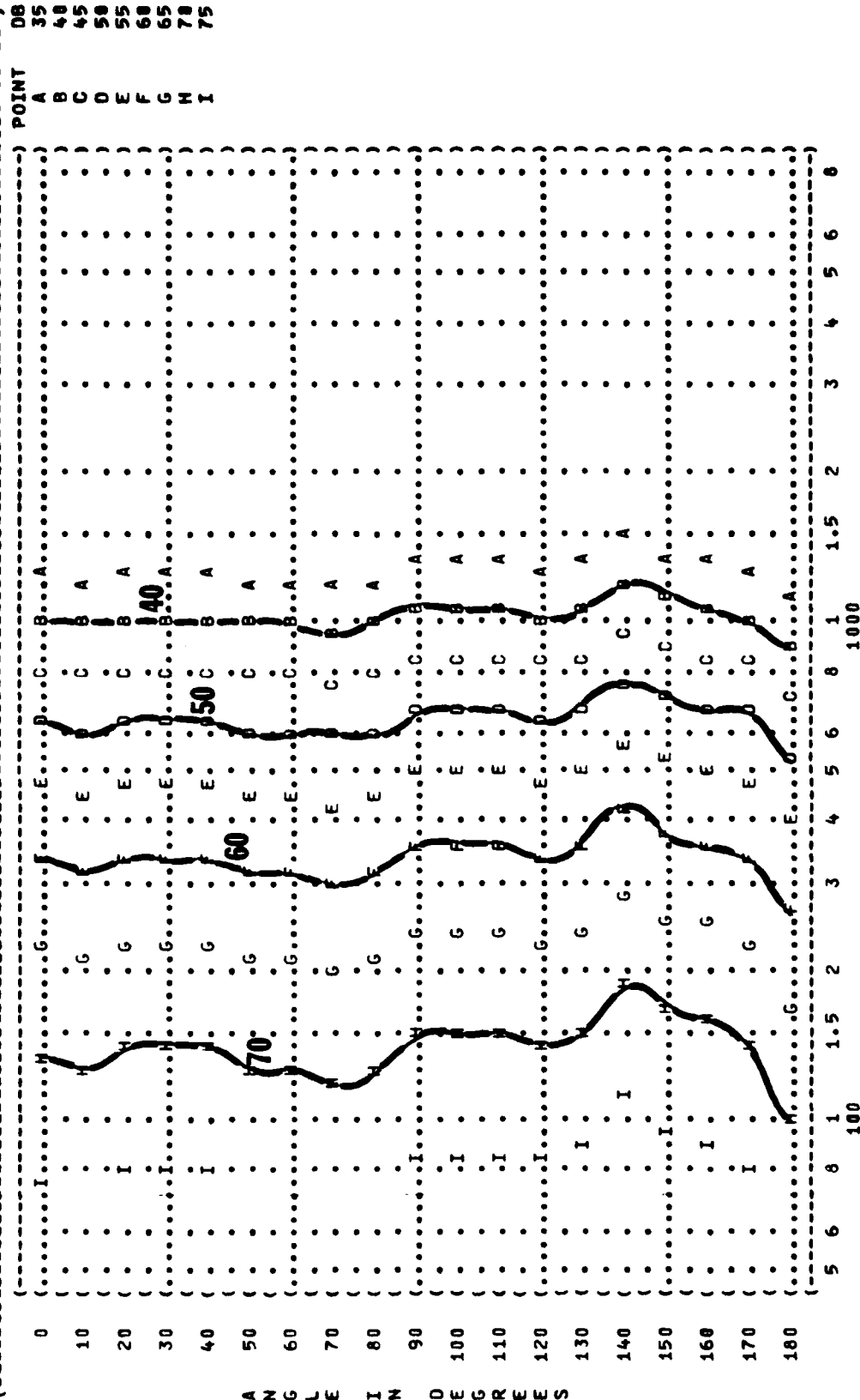
IDENTIFICATION:
OMEGA 1.4
TEST BN-078-001
RUN 01

NOISE SOURCE/SUBJECT:
F-106A AIRCRAFT
(J75-P-17 ENGINE)
FAR FIELD NOISE

OPERATION:
IDLE POWER
59% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HS
REL HUMID = 70 %

PAGE 20



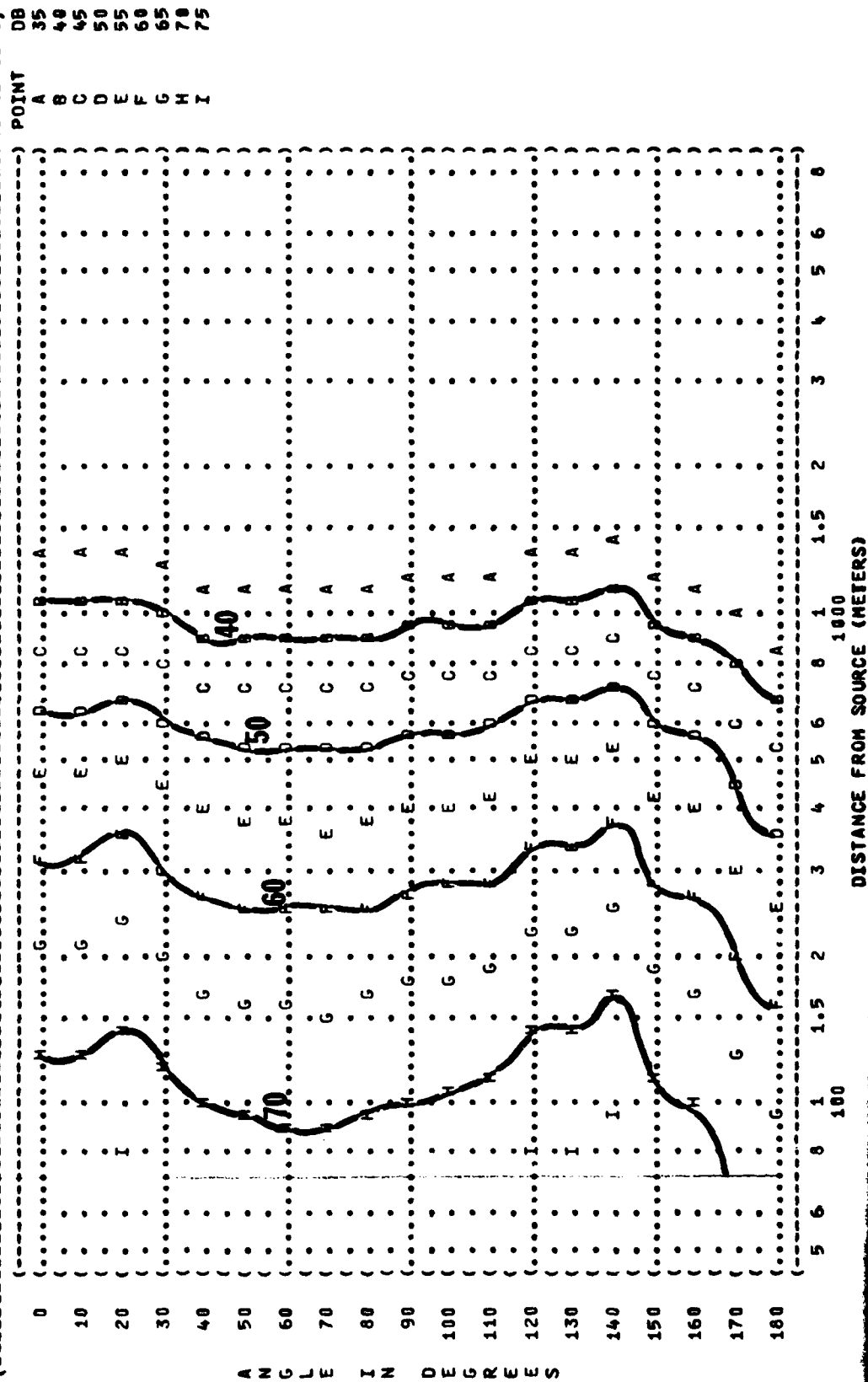
IDENTIFICATIONS

OMEGA 1.4

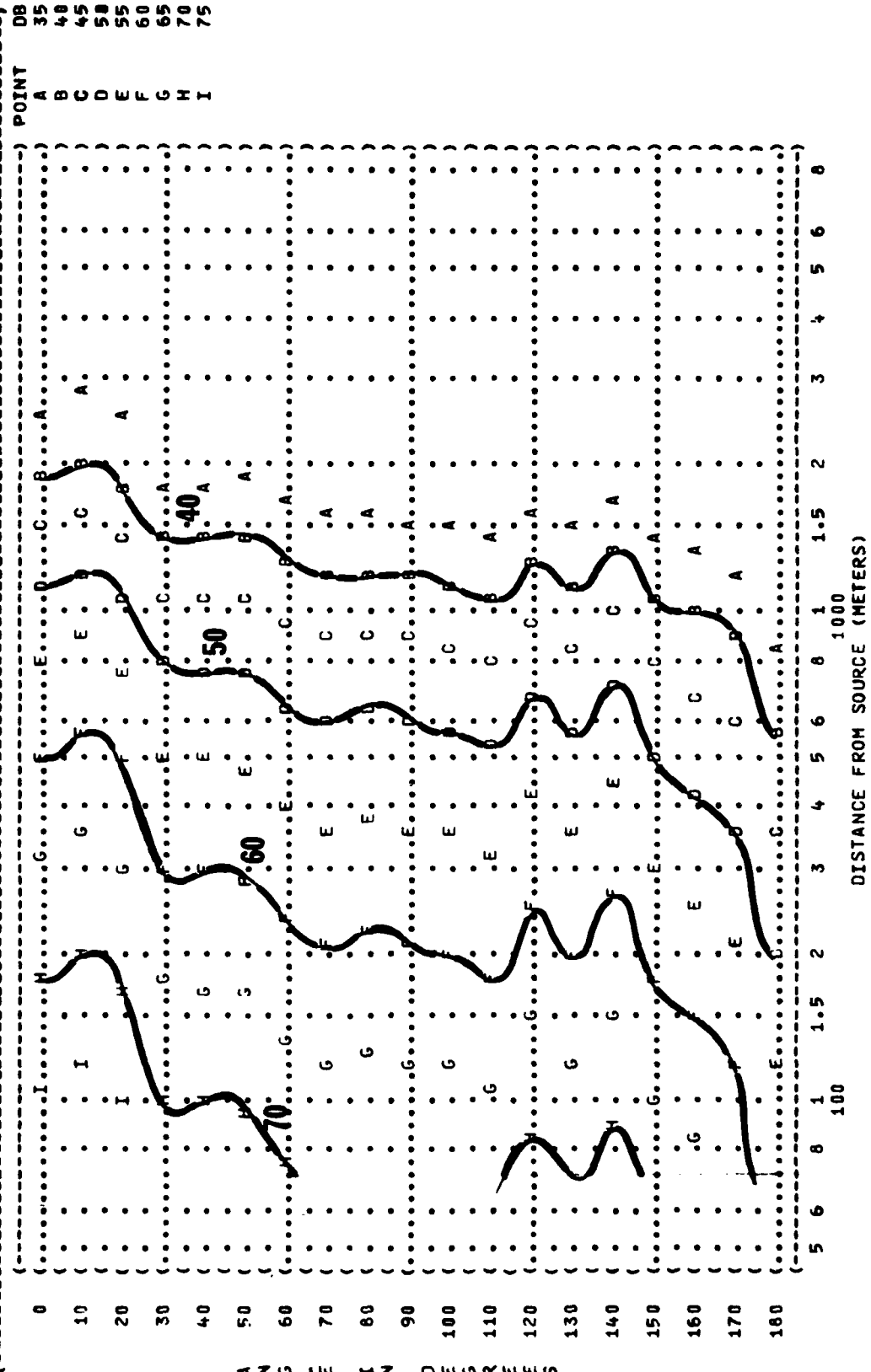
) RUN 01
)
) 25 JAN 82
)
) PAGE 21

) METEOROLOGY: :
) TEMP :
) BAR PRESS :
) REL HUMID :
)

) RUN 01
)
) 25 JAN
)
) PAGE 2



(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (11 EQUAL LEVEL CONTOURS (DB)
 (500 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION: (METEOROLOGY: (15 C
 (F-106A AIRCRAFT (IDLE POWER (TEMP
 ((J75-P-17 ENGINE) (59% RPM (BAR PRESS = .760 M HG
 (FAR FIELD NOISE (FREE FLOW (REL HUMID = 70 %
 (((((PAGE 22
 (IDENTIFICATION: (OMEGA 1.4
 (TEST BN-078-001
 (RUN 01
 (25 JAN 82
 (



A N G L E I N D E G R E E S

```

) IDENTIFICATIONS:
)
)
) OMEGA 1.4
)
) TEST BN-070-001
)
) RUN 01
)
)
) 25 JAN 62
)
)
) PAGE 23
)

```

```

) METEOROLOGY:
)
) TEMP
) BAR PRESS
) REL HUMID

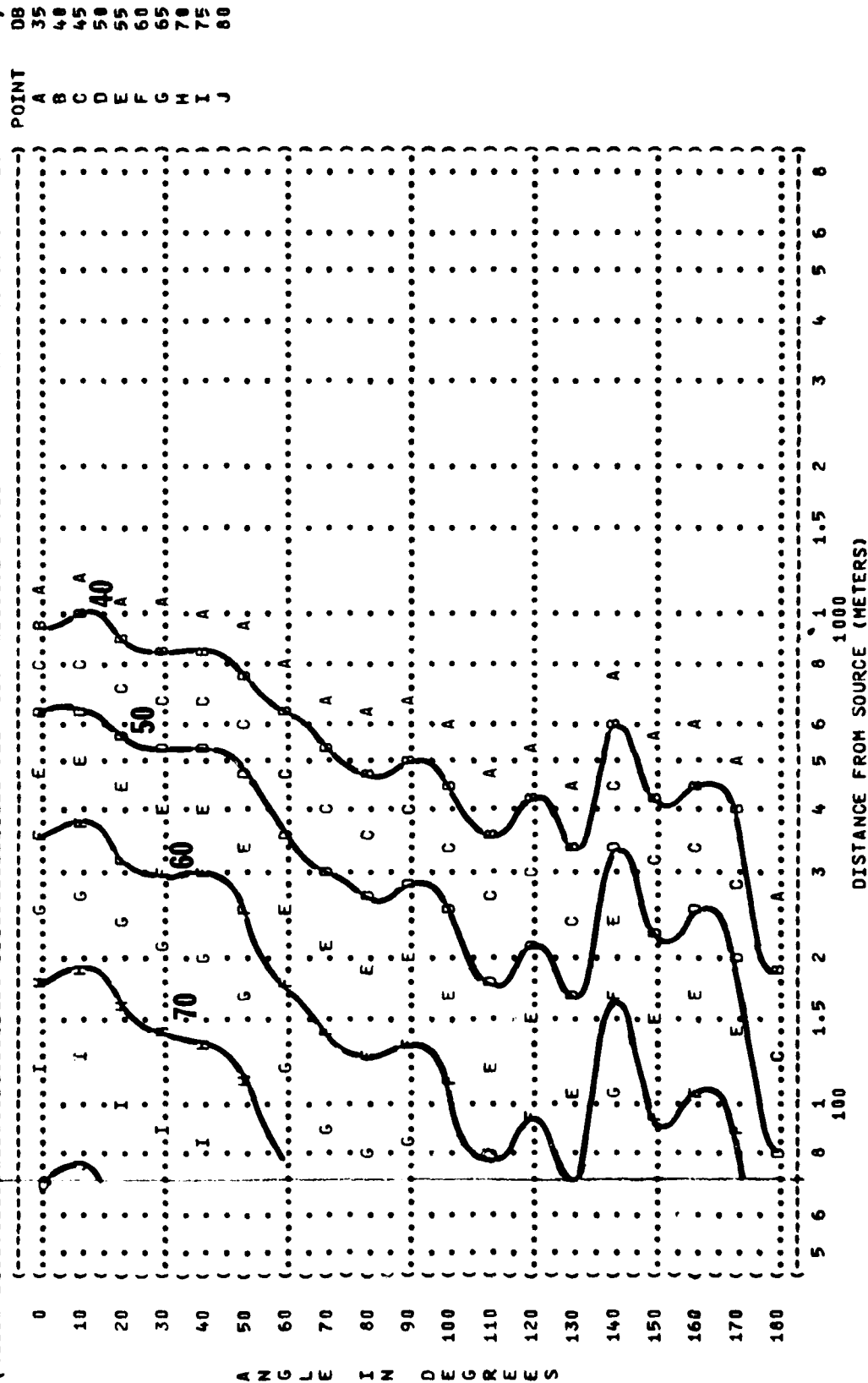
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TEMP = 15 C
BAR PRESS = .760 M Hg
REL HUMID = 70 %

RUN 01
25 JAN 67



(FIGURE: SOUND PRESSURE LEVEL (SPL))
 (11 EQUAL LEVEL CONTOURS (DB))
 (4000 HZ OCTAVE BAND)
 (NOISE SOURCE/SUBJECT:)
 (F-106A AIRCRAFT)
 ((J75-P-17 ENGINE))
 (FAR FIELD NOISE)
 (OPERATION:)
 (IDLE POWER)
 (59% RPM)
 (FREE FLOW)
 (METEOROLOGY:)
 (TEMP = 15 C)
 (BAR PRESS = .760 M HG)
 (REL HUMID = 70 %)
 (IDENTIFICATION:)
 (OMEGA 1.4)
 (TEST BN-078-001)
 (RUN 01)
 (25 JAN 82)
 (PAGE 25)



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AIR FORCE AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATT--ETC F/G 1/2
USAF BIODENVIRONMENTAL NOISE DATA HANDBOOK. VOLUME 158. F-106A A--ETC(U)
MAY 82 T H RAU

UNCLASSIFIED

AMRL-TR-75-50-VOL 158

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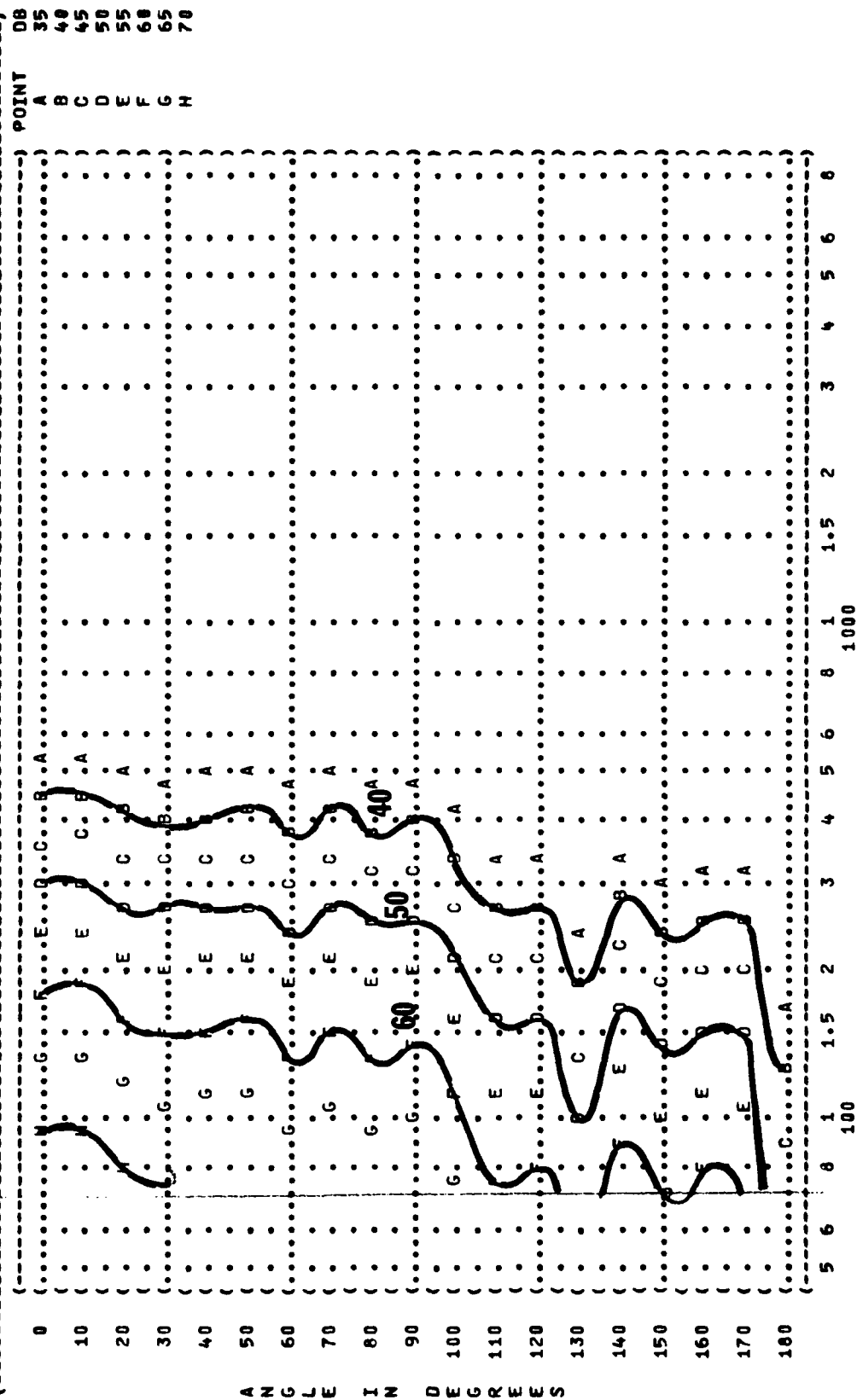
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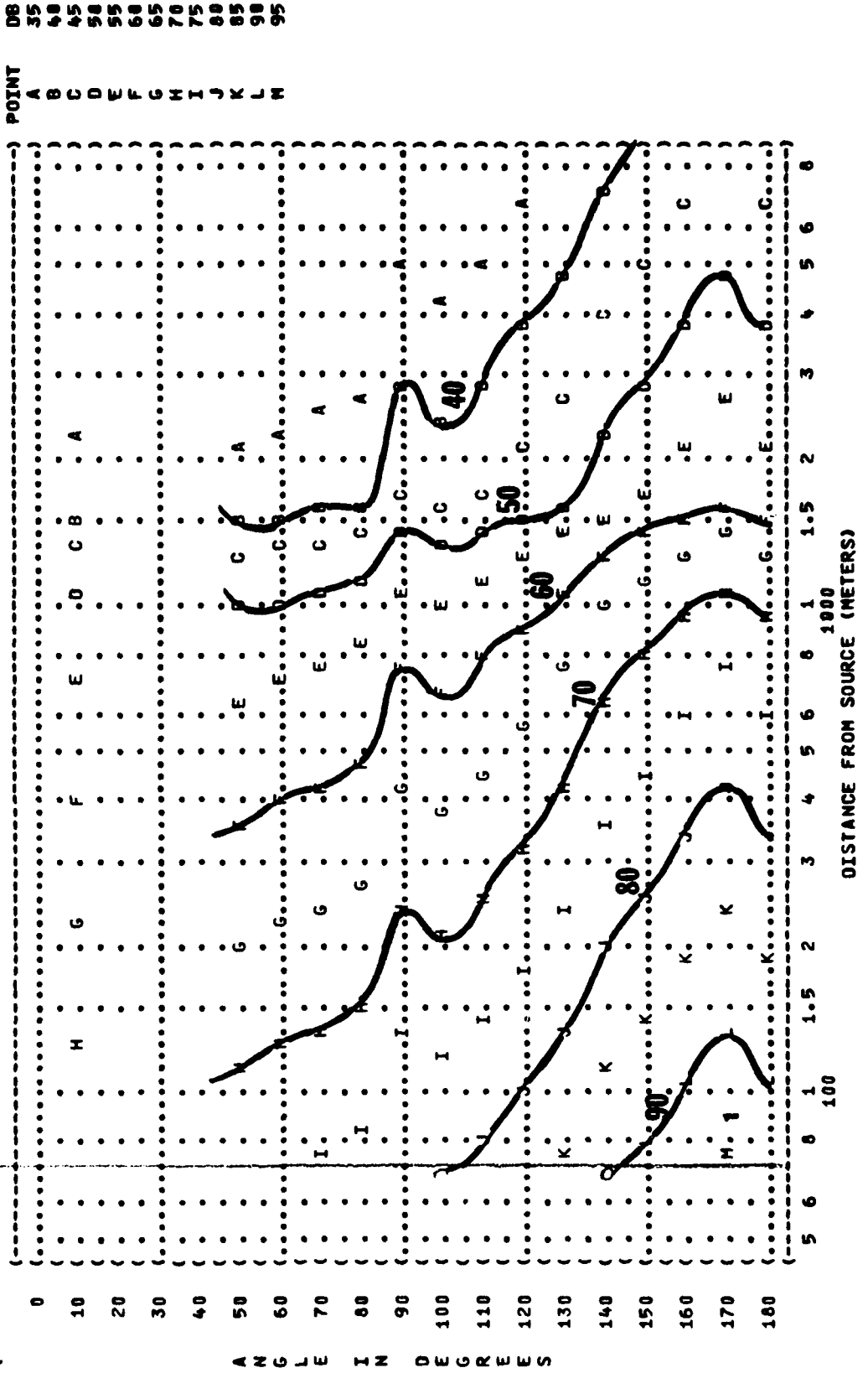
(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (11 EQUAL LEVEL CONTOURS (DB)
 (8000 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION:
 (F-106A AIRCRAFT (IDLE POWER
 ((J75-P-17 ENGINE) (59% RPM
 (FAR FIELD NOISE (FREE FLOW
 (METEOROLOGY: (TEMP = 15 C
 (BAR PRESS = .760 M HG
 (REL HUMID = 70 %
 (IDENTIFICATION: (OMEGA 1.4
 (TEST BN-078-001
 (RUN 01
 (25 JAN 82
 (PAGE 26



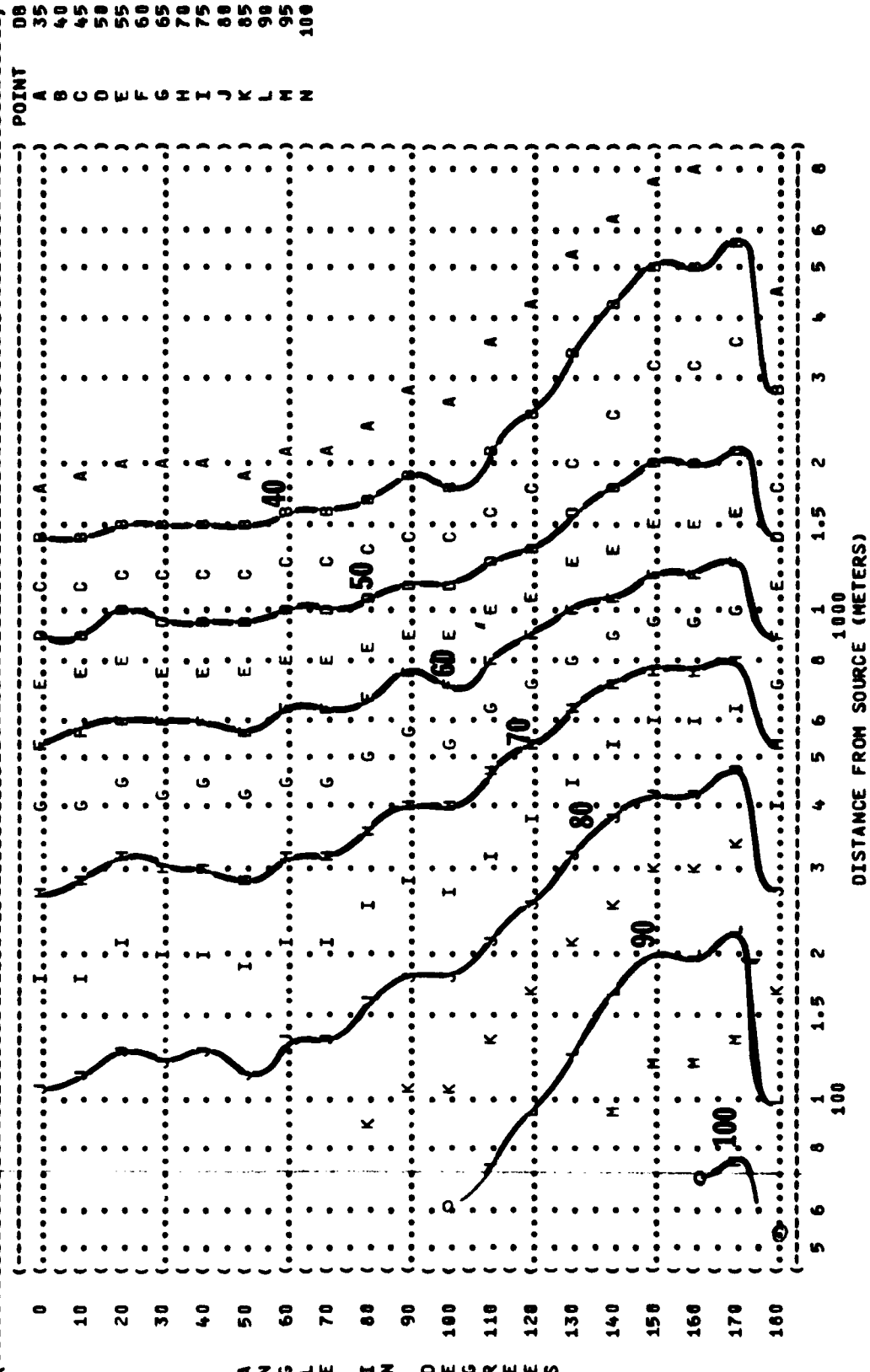
A N G L E I N D E G R E E S

(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (EQUAL LEVEL CONTOURS (DB)
 (11 31.5 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION:
 (F-106A AIRCRAFT (85% RPM
 ((J75-P-17 ENGINE) (FREE FLOW
 (FAR FIELD NOISE ((

) IDENTIFICATION:
)
) OMEGA 1.4
) TEST BN-878-001
) RUN 02
)
) METEOROLOGY:
) TEMP = 15 C
) BAR PRESS = .760 M HG
) 25 JAN 82
)
) REL HUMID = 70 %
)
) PAGE 18

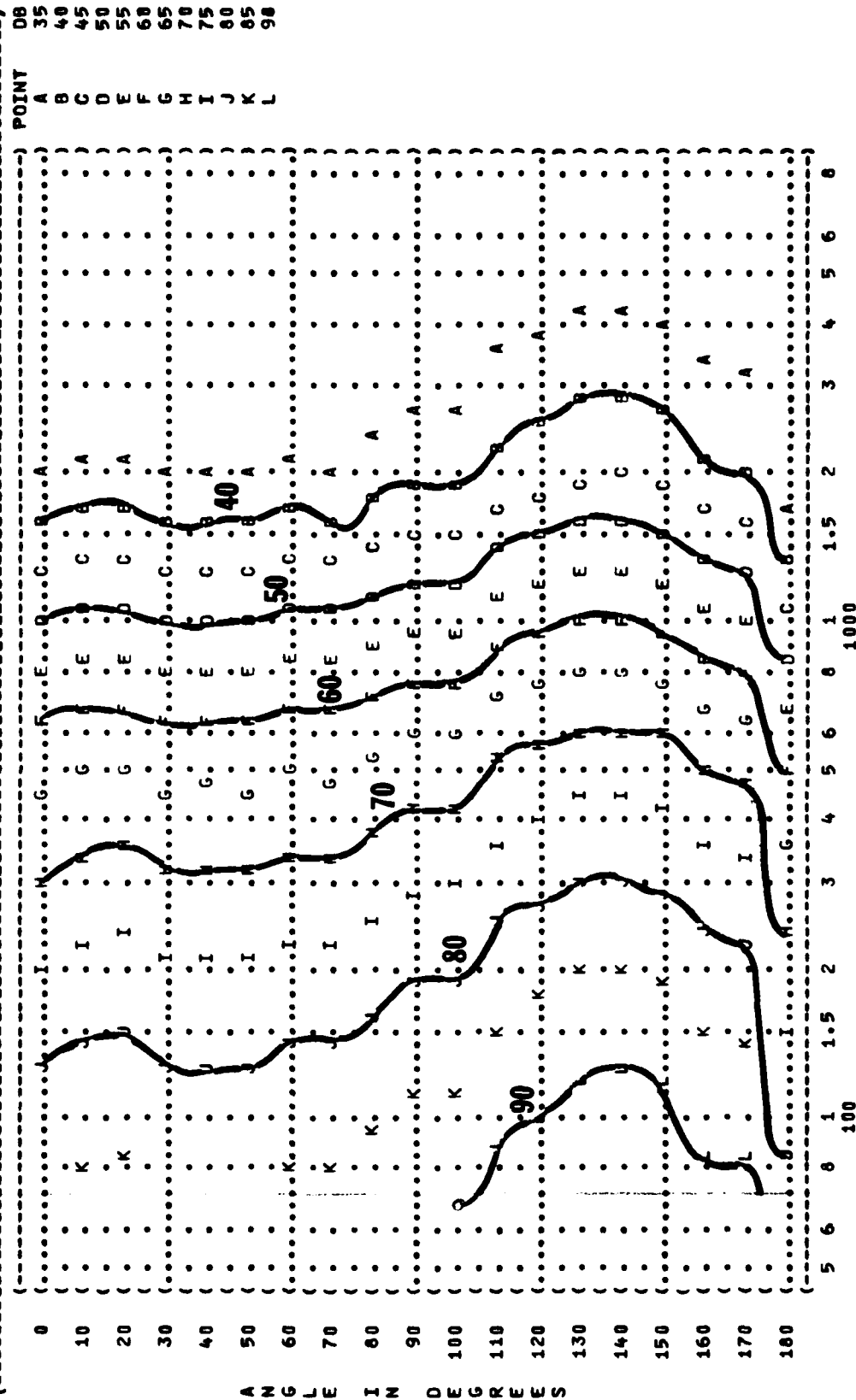


DB	POINT
35	A
40	B
45	C
50	D
55	E
60	F
65	G
70	H
75	I
80	J
85	K
90	L
95	M
100	N



426 JE IN DE GRWEN

(FIGURE: SOUND PRESSURE LEVEL (SPL))
 (11 EQUAL LEVEL CONTOURS (DB))
 (250 HZ OCTAVE BAND)
 (NOISE SOURCE/SUBJECT:)
 (F-106A AIRCRAFT)
 ((J75-P-17 ENGINE))
 (FAR FIELD NOISE)
 (OPERATION:)
 (85% RPM)
 (FREE FLOW)
 (METEOROLOGY:)
 (TEMP = 15 C)
 (BAR PRESS = .760 M HS)
 (REL HUMID = 70 %)
 (IDENTIFICATION:)
 (OMEGA 1.4)
 (TEST BN-078-001)
 (RUN 02)
 (25 JAN 82)
 (PAGE 21)



A N G L E I N D E G R E E S

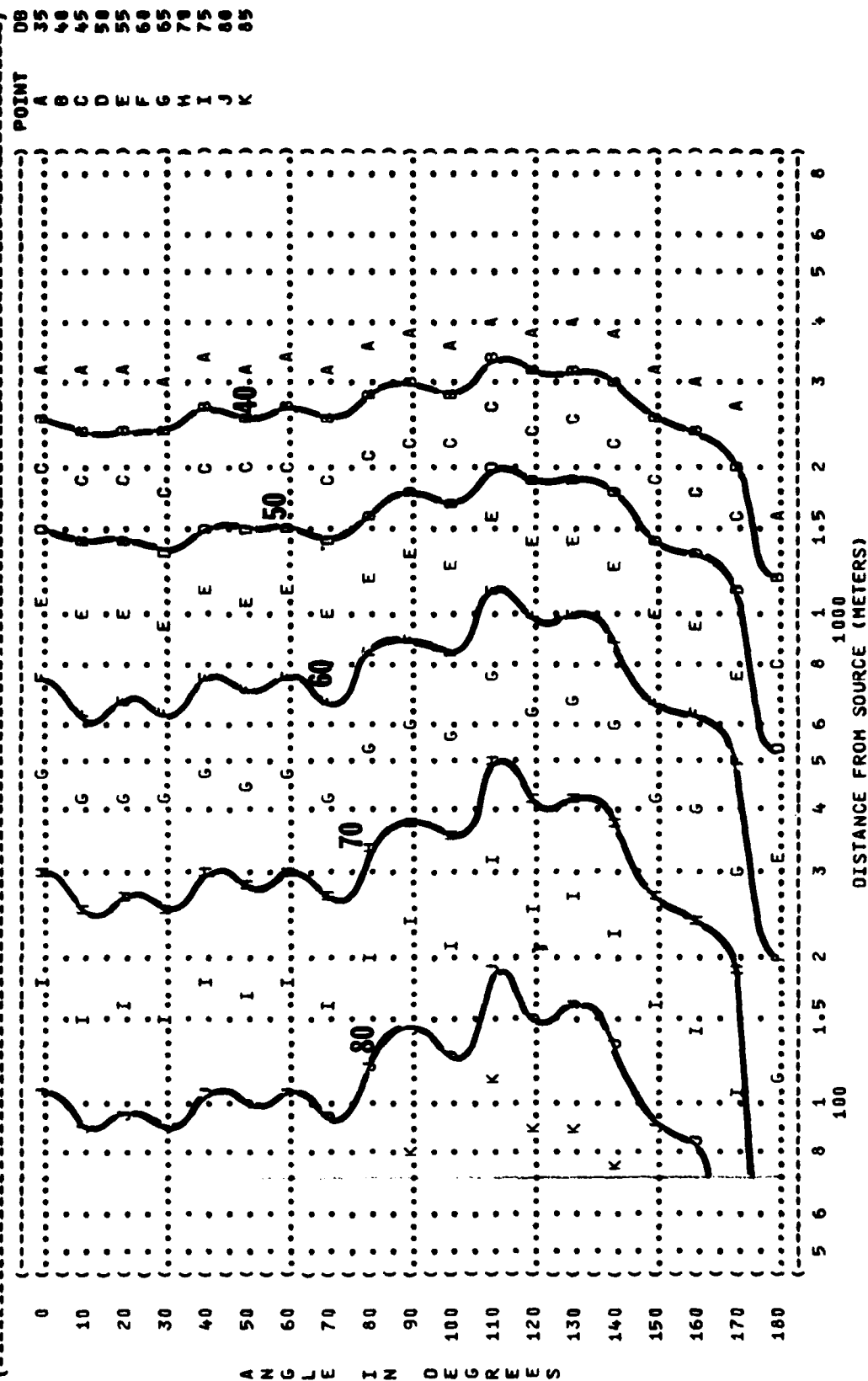
FIGURE 11 SOUND PRESSURE LEVEL (SPL)
EQUAL LEVEL CONTOURS (DB)
1000 HZ OCTAVE BAND

11

```

) FIGURE: SOUND PRESSURE LEVEL (SPL)
) EQUAL LEVEL CONTOURS (DB)
) 11
) 1000 HZ OCTAVE BAND
)
) NOISE SOURCE/SUBJECT: ) OPERATION: ) METEOROLOGY:
) F-106A AIRCRAFT ) 85% RPM ) TEMP = 15 C
) (J75-P-17 ENGINE) ) FREE FLOW ) BAR PRESS = .760 M HG
) FAR FIELD NOISE ) ) REL HUMID = 70 %
)
)
) IDENTIFICATIONS
)
) OMEGA 1.4
) TEST 8N-078-00
) RUN 02
) 25 JAN 82
) PAGE 23

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FIGURE#	SOUND PRESSURE LEVEL (SPL)	EQUAL LEVEL CONTOURS (DB)	IDENTIFICATION#
11	6000 HZ OCTAVE BAND		OMEGA 1.4
NOISE SOURCE/SUBJECT:			TEST 8N-876-081
F-106A AIRCRAFT	(OPERATION:		RUN 02
(J75-P-17 ENGINE)	(85% RPM	TEMP = 15 C	
(FAR FIELD NOISE	(FREE FLOW	BAR PRESS = .760 M HG	25 JAN 82
		REL HUMID = 70 %	
			PAGE 26

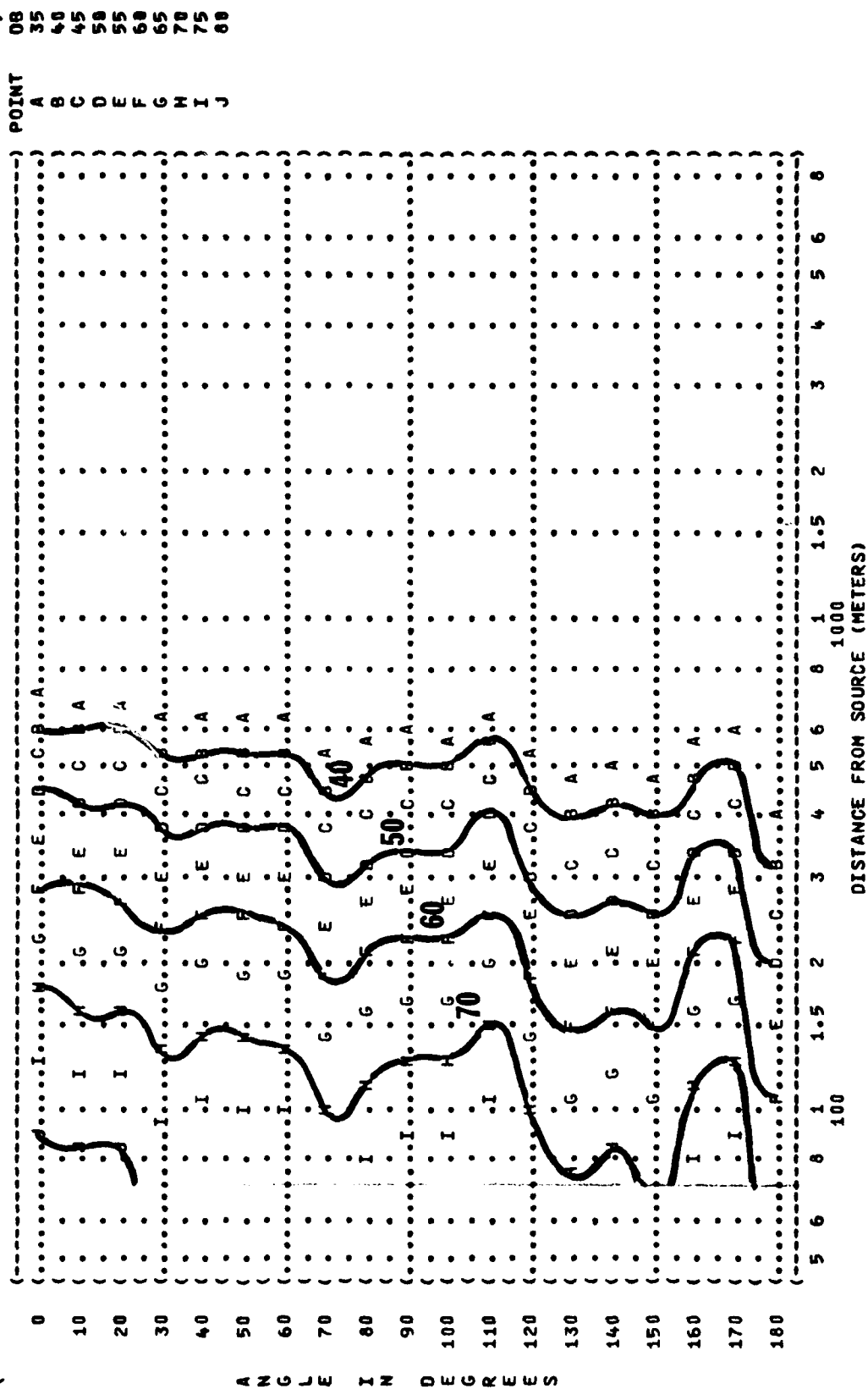
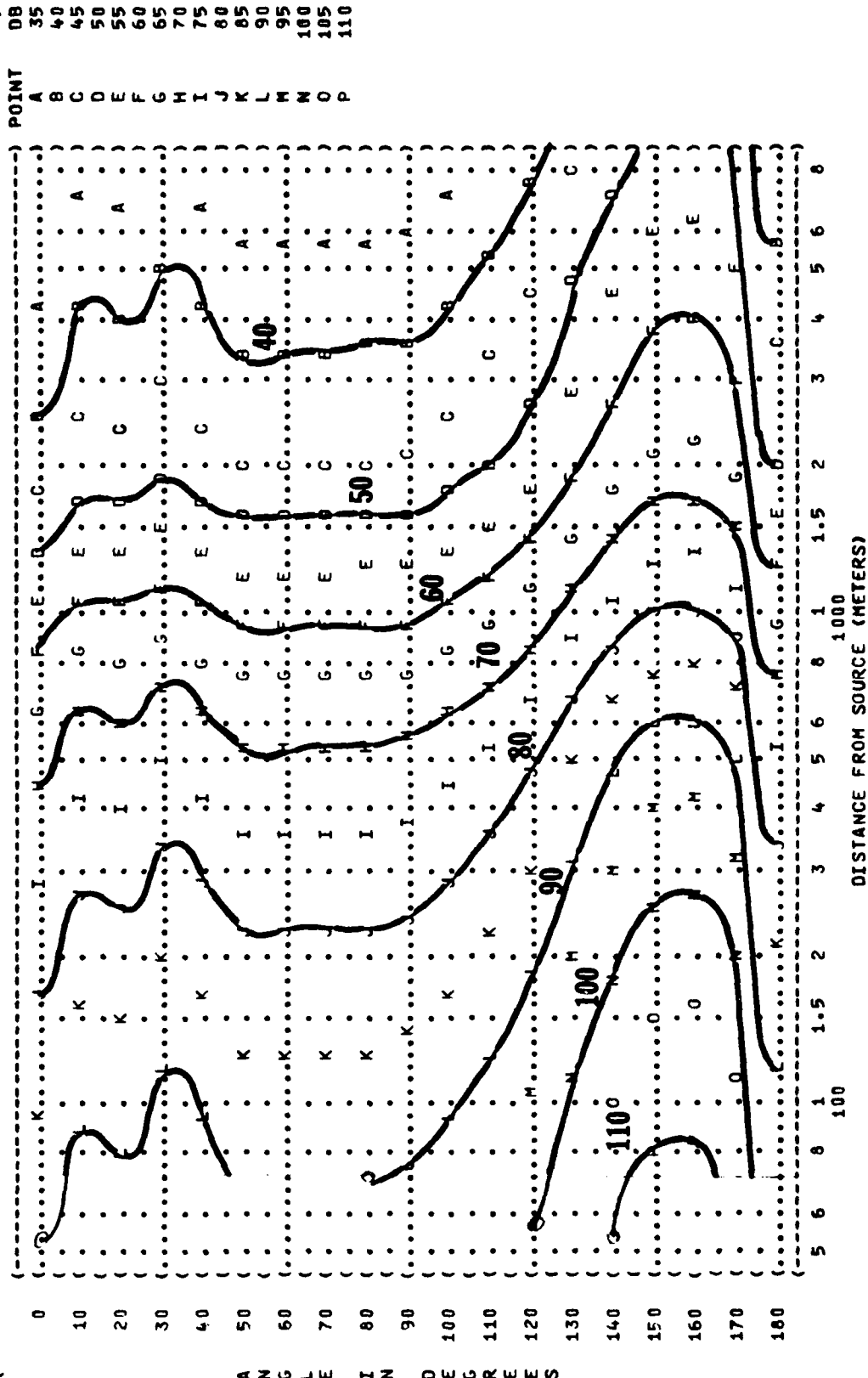
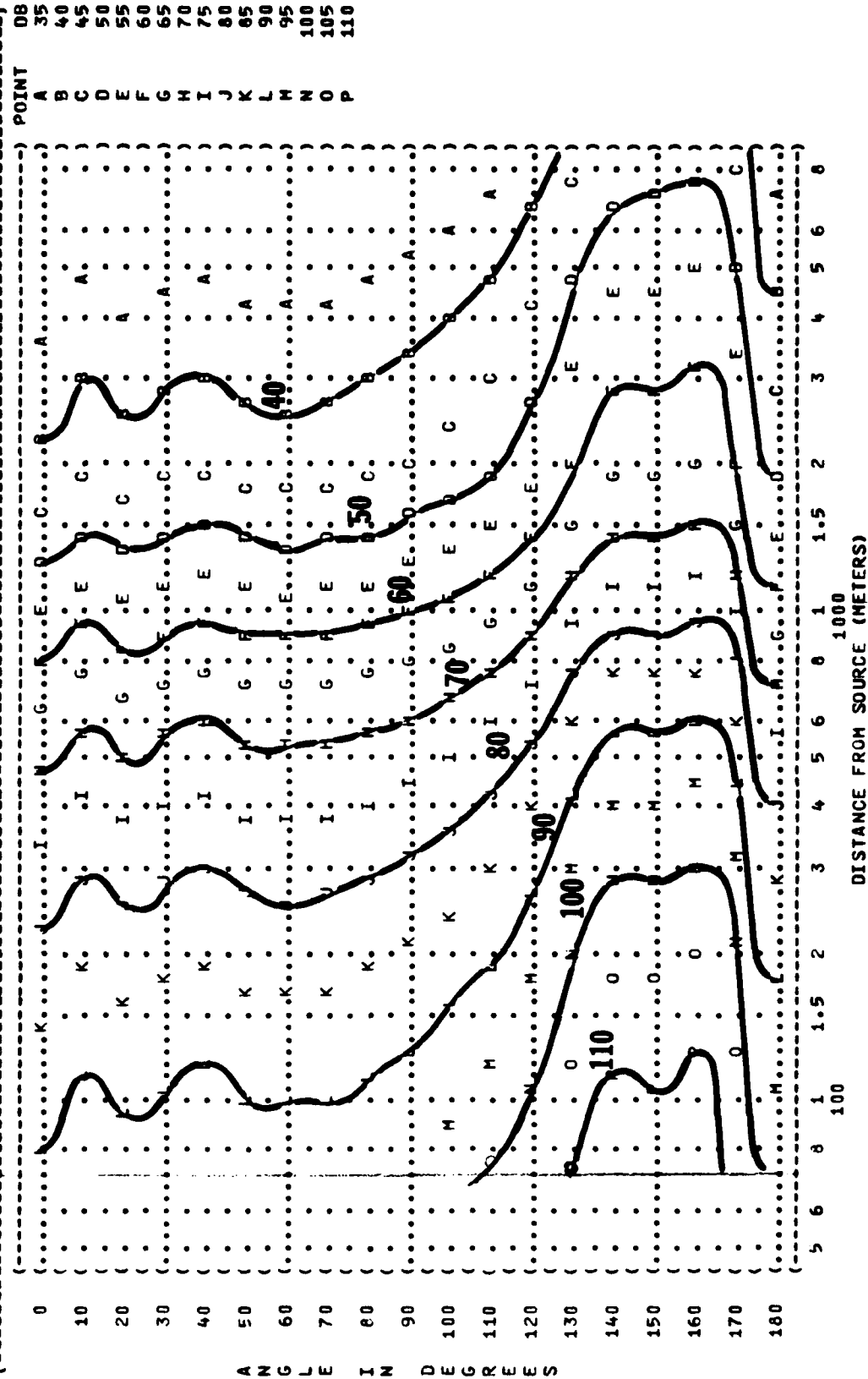


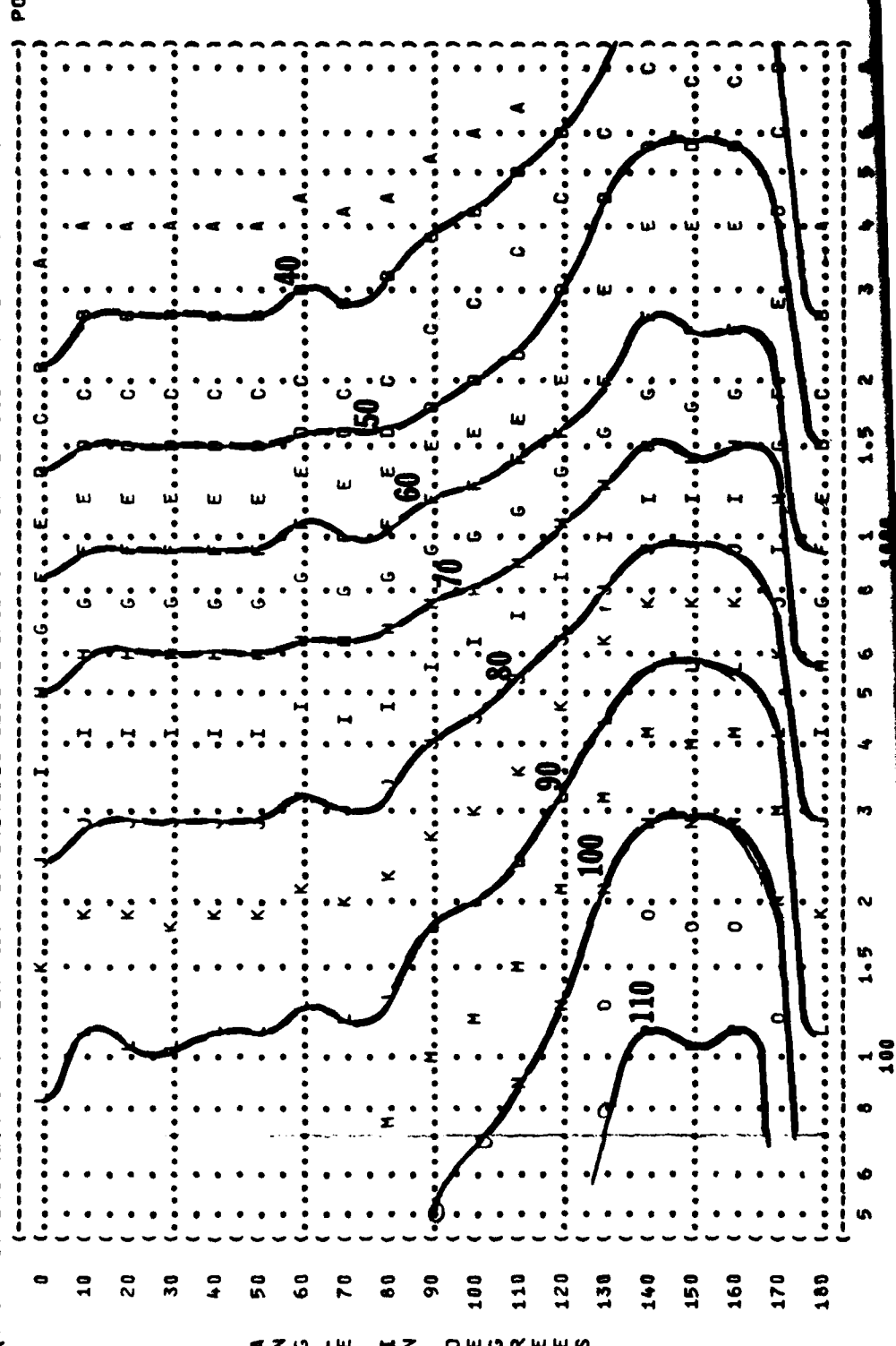
FIGURE:	SOUND PRESSURE LEVEL {SPL}	IDENTIFICATION:
11	EQUAL LEVEL CONTOURS (DB)	
	63 HZ OCTAVE BAND	OMEGA 1.4
		TEST 8N-078-001
		RUN 03
NOISE SOURCE/SUBJECT:	METEOROLOGY:	
F-106A AIRCRAFT	TEMP = 15 C	
(J75-P-17 ENGINE)	BAR PRESS = .760 M Hg	25 JAN 82
FAR FIELD NOISE	REL HUMID = 70 %	PAGE 19



(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (EQUAL LEVEL CONTOURS (DB)
 (**11** 125 HZ OCTAVE BAND
 () IDENTIFICATION:
 ()
 () OMEGA 1.4
 () TEST BN-070-001
 () RUN 03
 (NOISE SOURCE/SUBJECT:) METEOROLOGY:
 (F-106A AIRCRAFT) TEMP = 15 C
 ((J75-P-17 ENGINE)) BAR PRESS = .760 M H5
 (FAR FIELD NOISE) REL HUMID = 70 %
 () PAGE 20



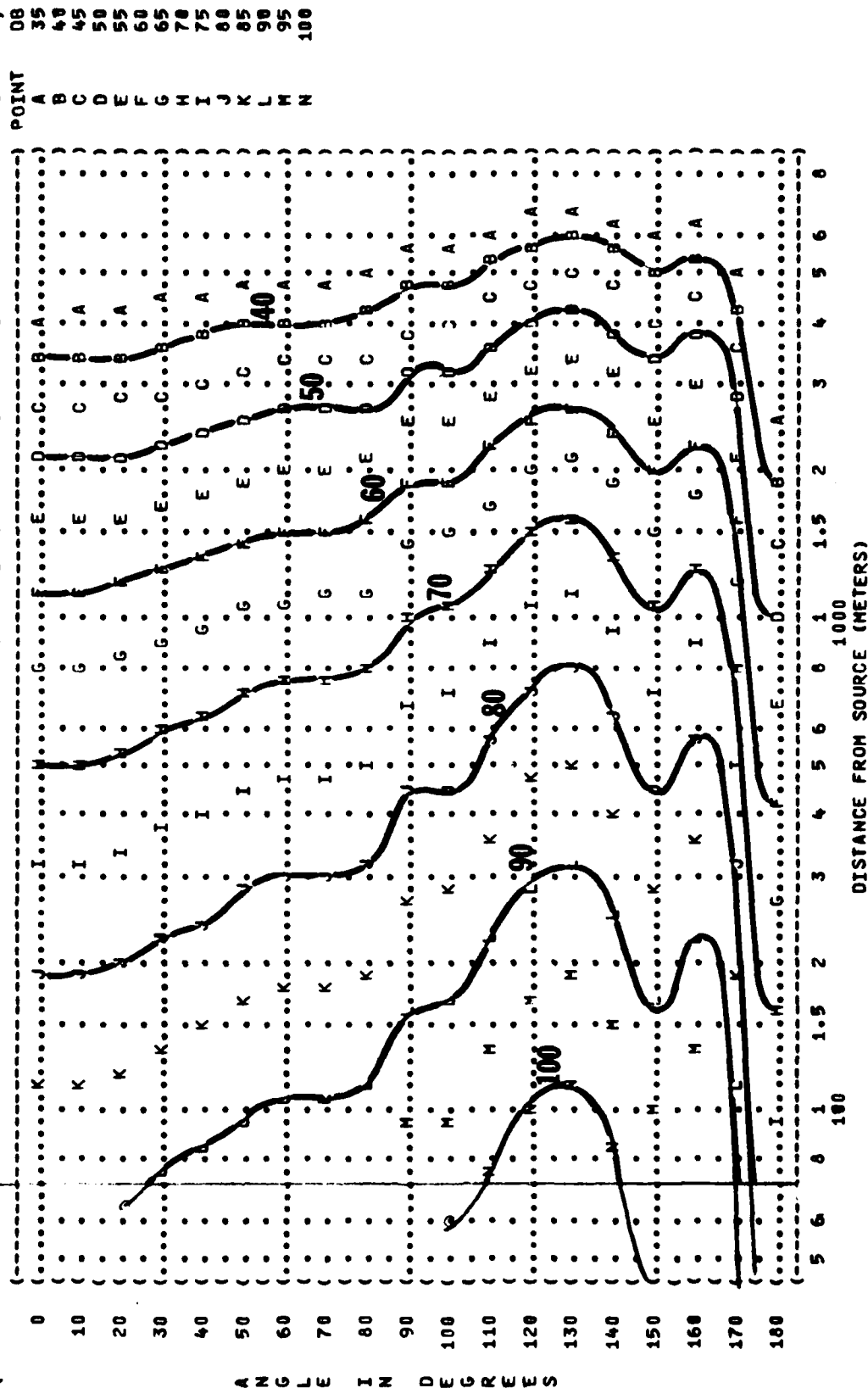
DB	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110
DINT	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P



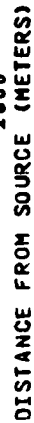
◀ Z U J W H Z O W U X W W S

(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (EQUAL LEVEL CONTOURS (DB)
 (11 1000 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION:
 (F-106A AIRCRAFT (95% RPM
 ((J75-P-17 ENGINE) (FREE FLOW
 (FAR FIELD NOISE ((

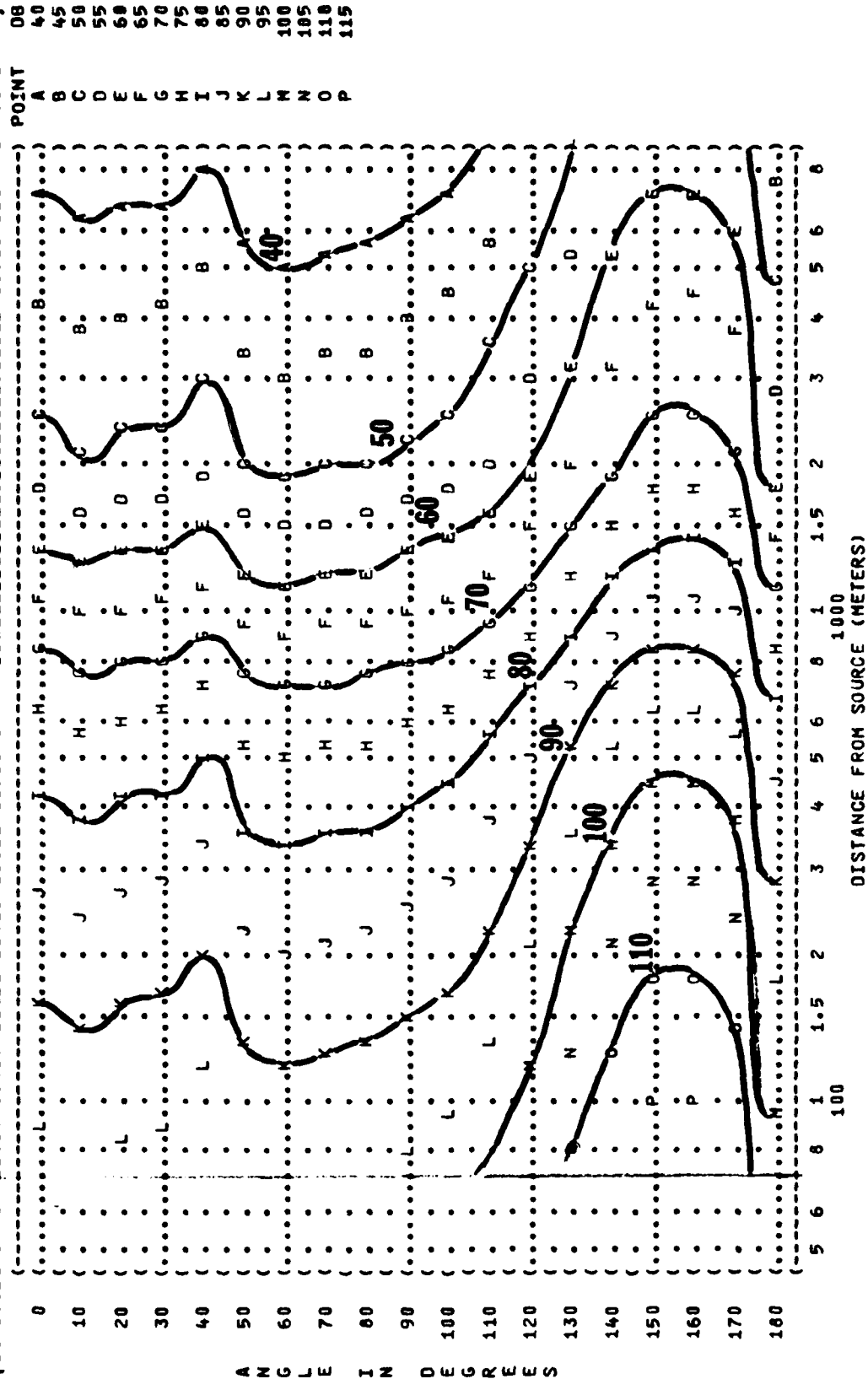
) IDENTIFICATION:
) OMEGA 1.4
) TEST BN-078-001
) RUN 03
) METEOROLOGY:
) TEMP = 15 C
) BAR PRESS = .760 M HG
) REL HUMID = 70 %
) PAGE 23

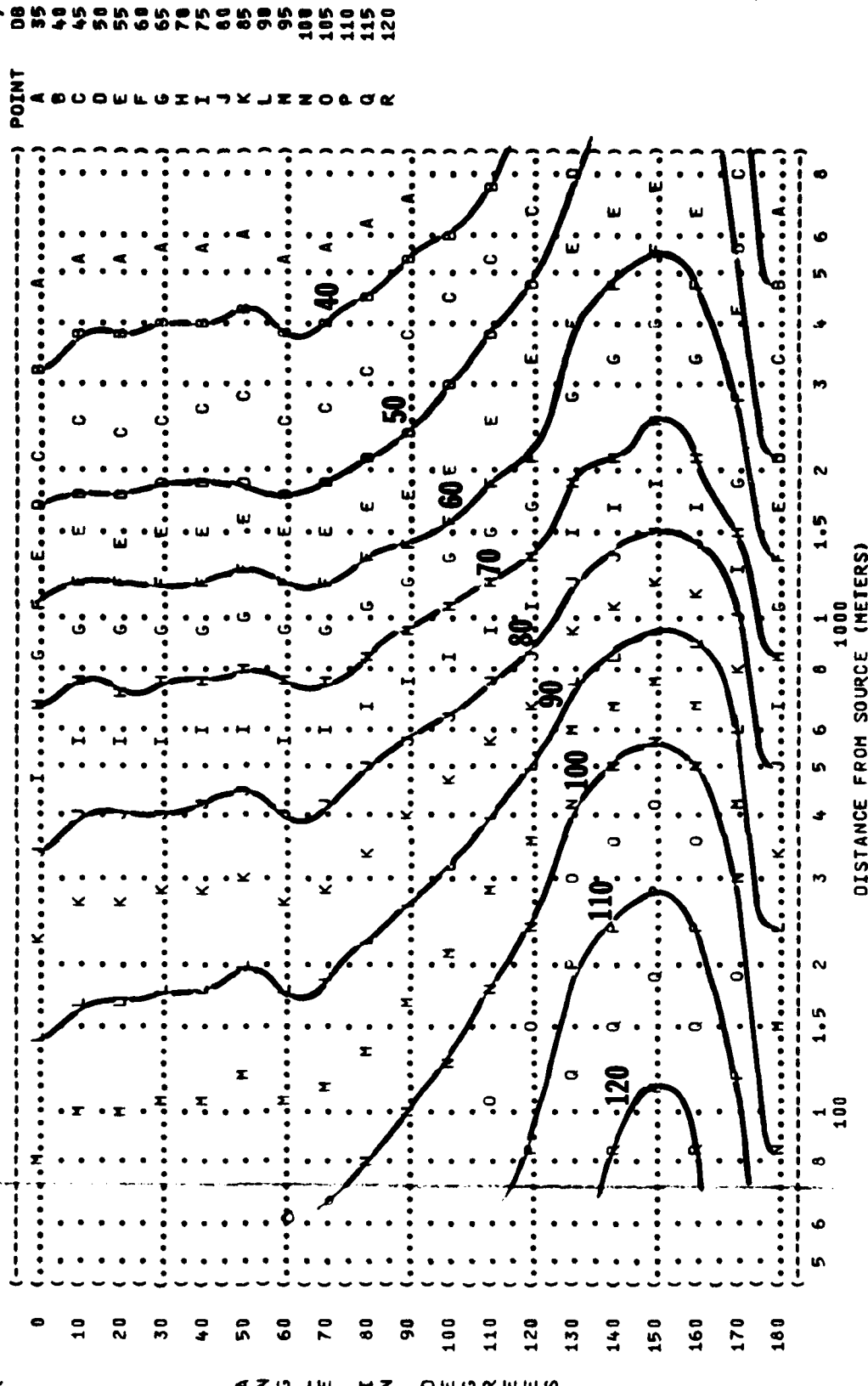


TEOROLOGY: = 15 C H3
TEMP = .760 M H3
BAR PRESS = 70 Z
REL HUMID =

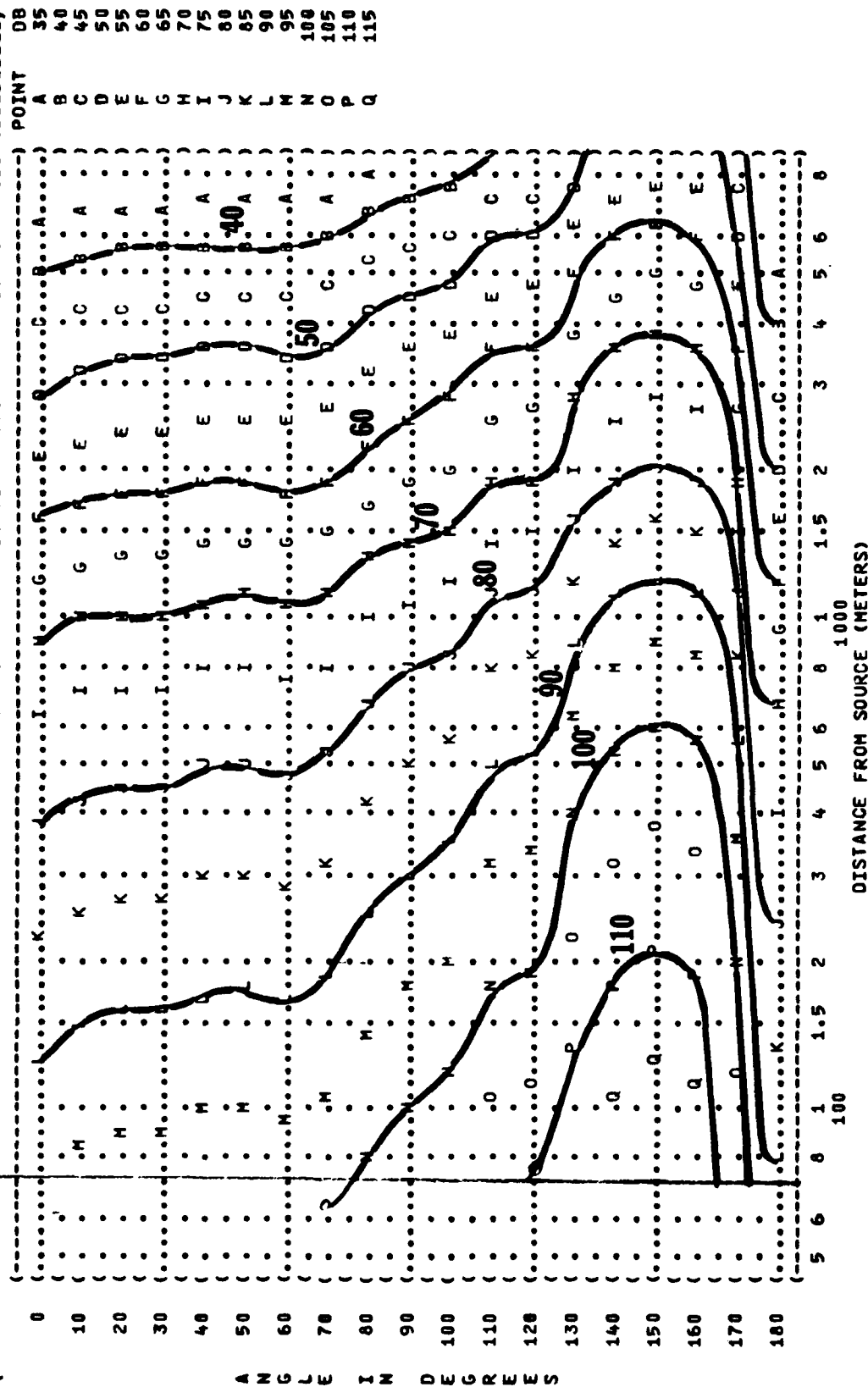


() FIGURE: SOUND PRESSURE LEVEL (SPL)
 () 11 EQUAL LEVEL CONTOURS (DB)
 () 63 HZ OCTAVE BAND
 () NOISE SOURCE/SUBJECT: () OPERATIONS:
 () F-106A AIRCRAFT () MILITARY PMR
 () (J75-P-17 ENGINE) () 102% RPM
 () FAR FIELD NOISE () FREE FLOW
 () METEOROLOGY: () TEMP = 15 C
 () BAR PRESS = .760 M HS
 () REL HUMID = 70 %
 () IDENTIFICATION:
 () OMEGA 1.4
 () TEST BN-076-001
 () RUN 04
 () 25 JAN 82
 () PAGE 19



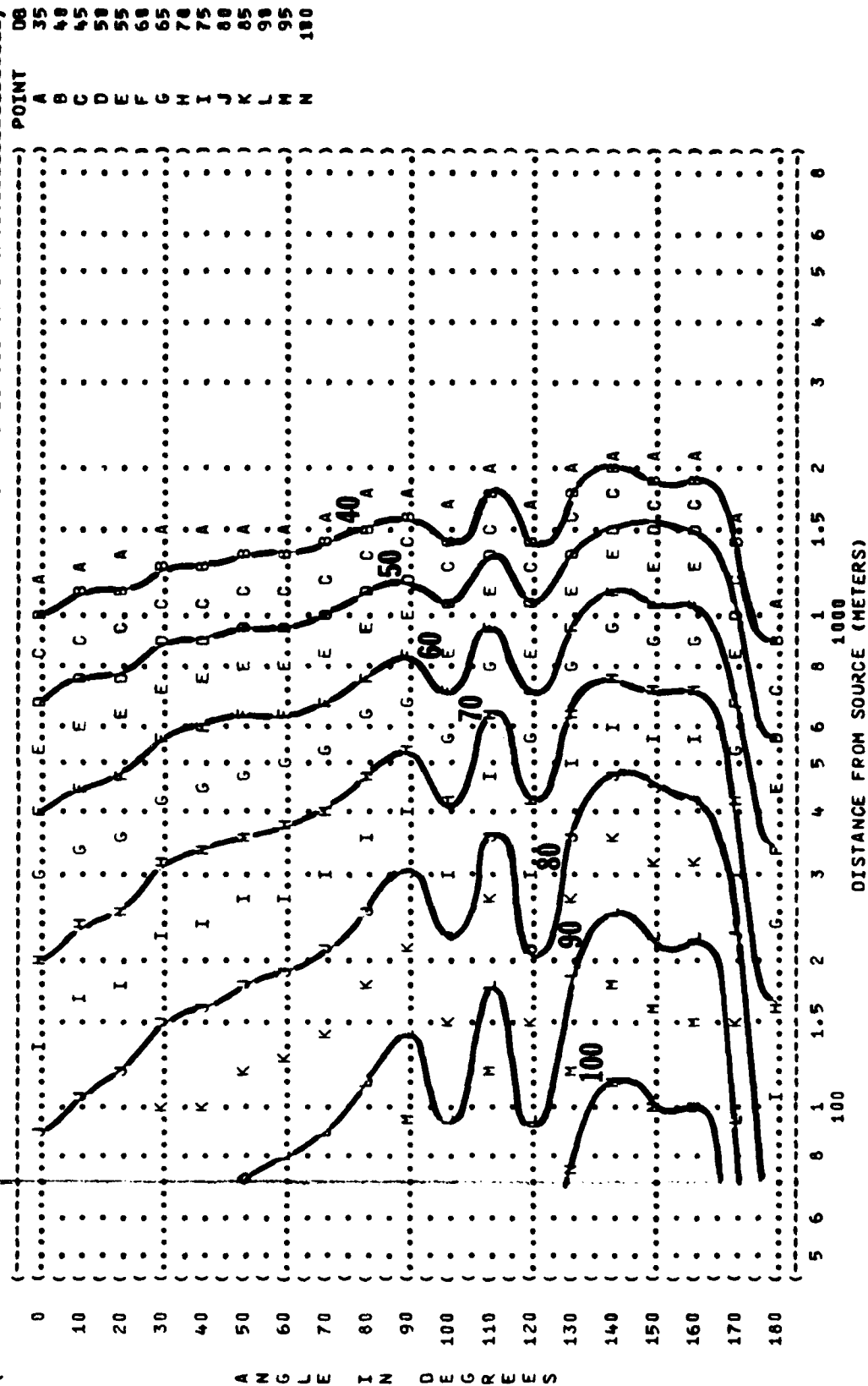


(FIGURE: SOUND PRESSURE LEVEL (SPL))
 (11 EQUAL LEVEL CONTOURS (DB))
 (500 HZ OCTAVE BAND)
 (NOISE SOURCE/SUBJECT:)
 (F-106A AIRCRAFT)
 ((J75-P-17 ENGINE))
 (FAR FIELD NOISE)
 (OPERATION:)
 (MILITARY PMR)
 (102% RPM)
 (FREE FLOW)
 (METEOROLOGY:)
 (TEMP = 15 C)
 (BAR PRESS = .760 M HG)
 (REL HUMID = 70 %)
 (IDENTIFICATION:)
 (OMEGA 1.4)
 (TEST BN-878-001)
 (RUN 04)
 (25 JAN 82)
 (PAGE 22)



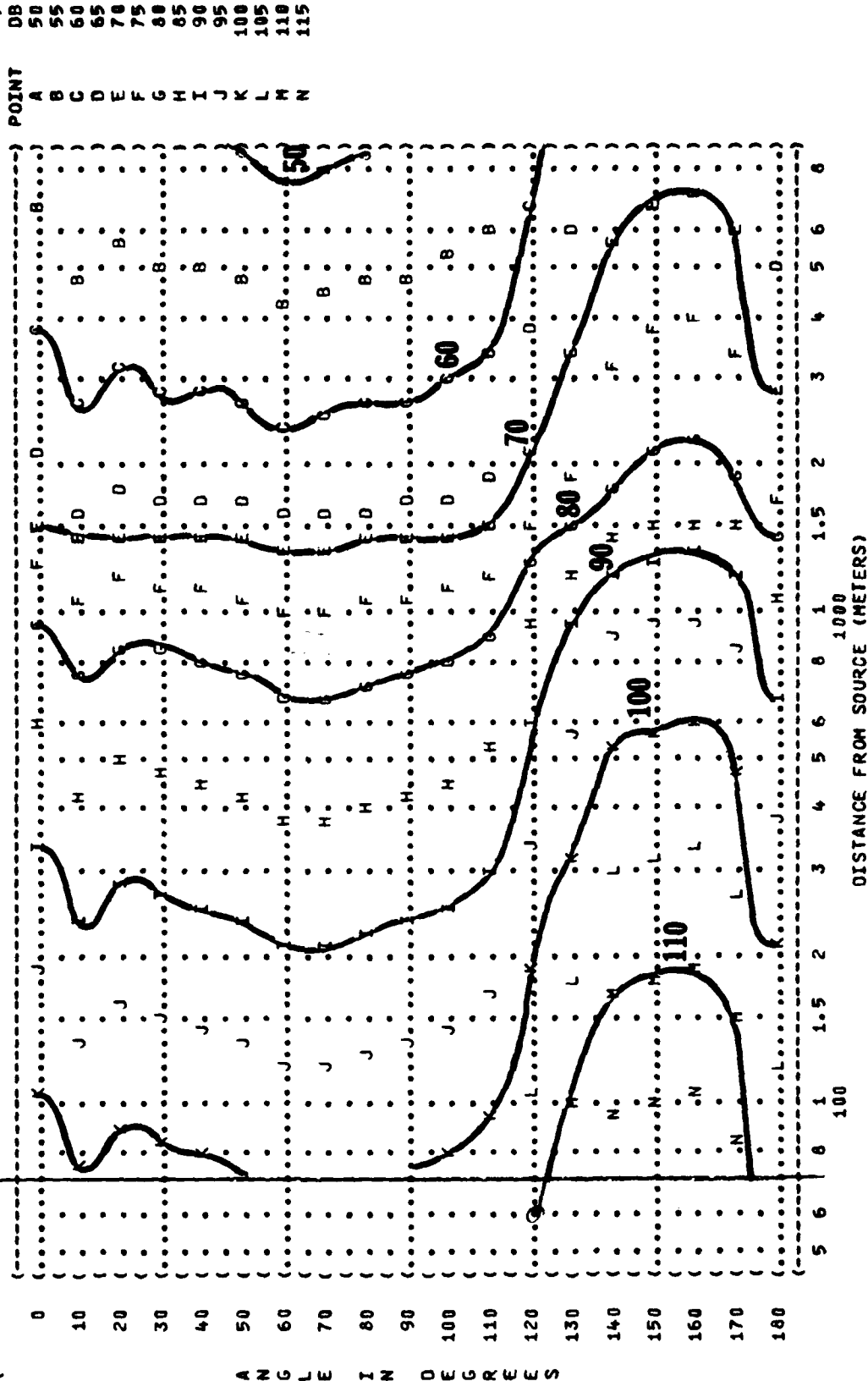



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( ( FIGURE: SOUND PRESSURE LEVEL {SPL} ) IDENTIFICATION: )
( ( EQUAL LEVEL CONTOURS (DB) ) )
( ( 11 4800 HZ OCTAVE BAND ) OMEGA 1.4 )
( ( NOISE SOURCE/SUBJECT: ) TEST BN-070-001 )
( ( F-106A AIRCRAFT ) RUN 04 )
( ( (J75-P-17 ENGINE) ) BAR PRESS = .760 M HG )
( ( FAR FIELD NOISE ) REL HUMID = 70 % )
( ( ) ) PAGE 25 )
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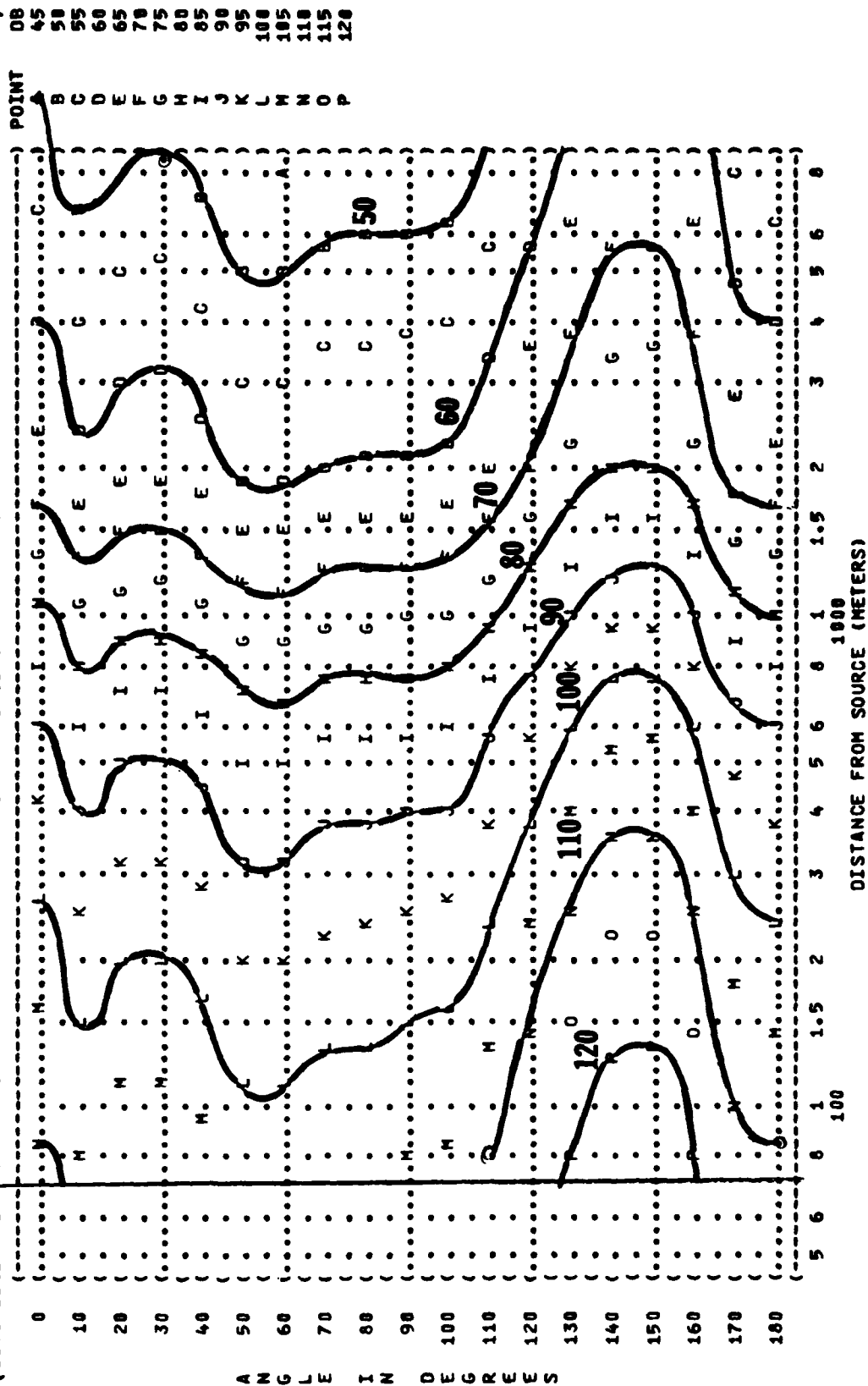




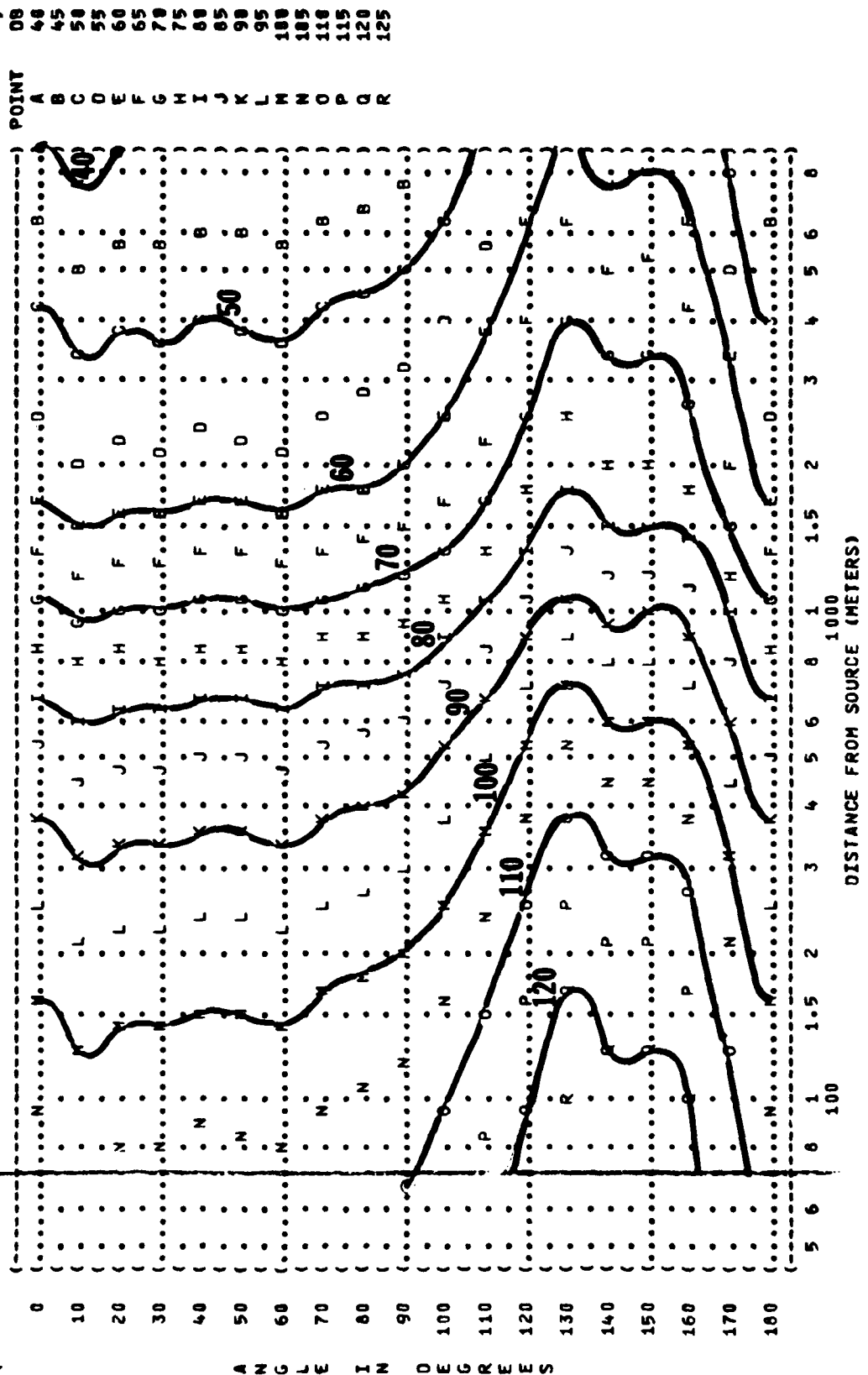
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 (11 EQUAL LEVEL CONTOURS (DB))
 (31.5 HZ OCTAVE BAND)
 (NOISE SOURCE/SUBJECT:)
 (F-106A AIRCRAFT)
 ((J75-P-17 ENGINE))
 (FAR FIELD NOISE)
 (OPERATION:)
 (AFTERBURNER PWR)
 (102% RPM)
 (FREE FLOW)
 (METEOROLOGY:)
 (TEMP = 15 C)
 (BAR PRESS = .760 M HG)
 (REL HUMID = 78 %)
 (IDENTIFICATION:)
 (OMEGA 1.4)
 (TEST BN-078-001)
 (RUN 05)
 (25 JAN 82)
 (PAGE 10)



(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (EQUAL LEVEL CONTOURS (DB)
 (**11** 63 HZ OCTAVE BAND
 () IDENTIFICATION:
 () OMEGA 1.4
 () TEST BN-076-001
 () RUN 05
 (NOISE SOURCE/SUBJECT:) METEOROLOGY:
 (F-106A AIRCRAFT) TEMP = 15 C
 ((J75-P-17 ENGINE)) BAR PRESS = .760 M HG
 (FAR FIELD NOISE) REL HUMID = 70 %
 () PAGE 19



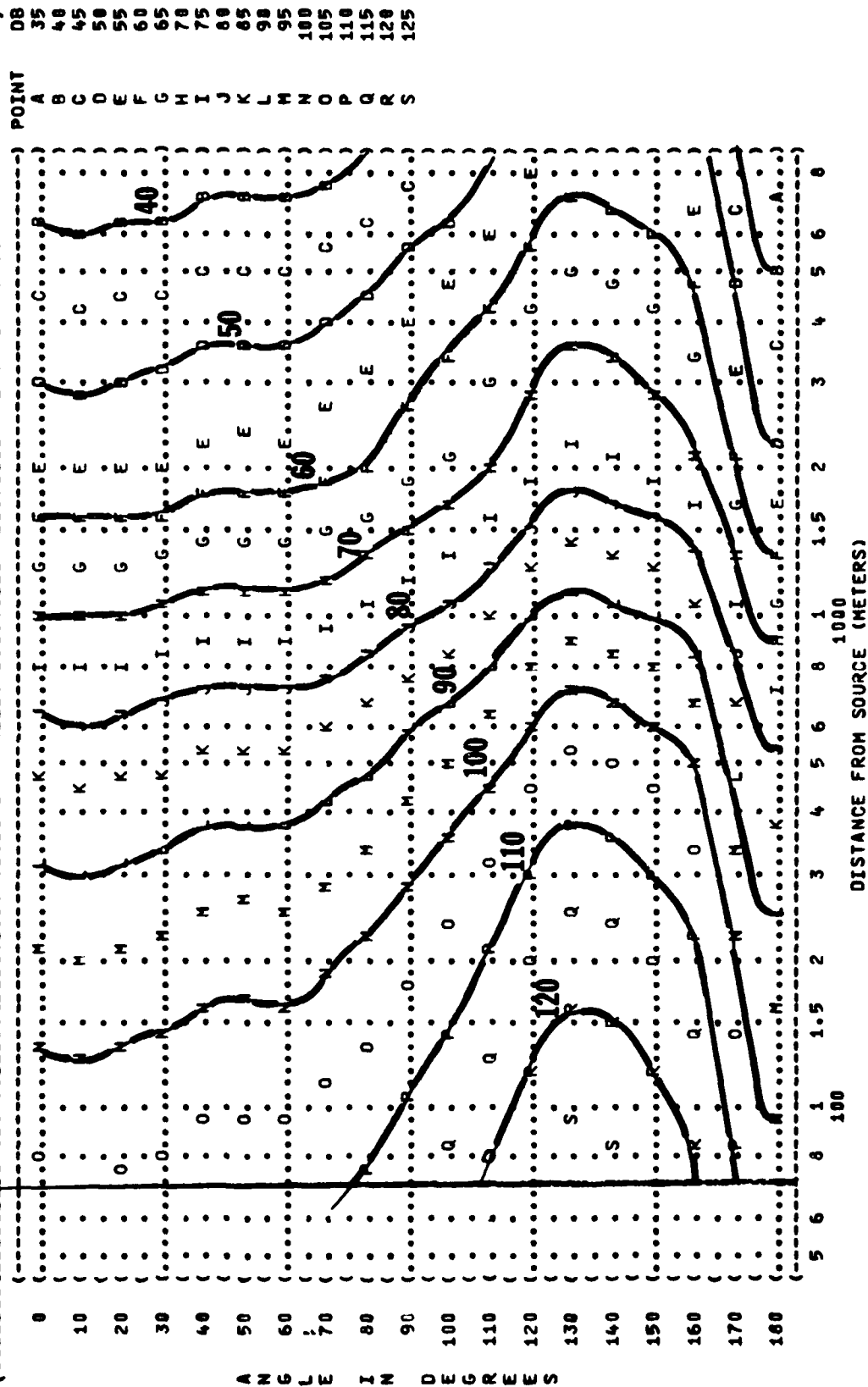
(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (EQUAL LEVEL CONTOURS (DB)
 (11 125 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION:
 (F-106A AIRCRAFT (AFTERBURNER PWR
 ((J75-P-17 ENGINE) (102% RPM
 (FAR FIELD NOISE (FREE FLOW
 (METEOROLOGY:
 (TEMP = 15 C
 (BAR PRESS = .760 H MG
 (REL HUMID = 70 %
 (IDENTIFICATIONS:
 (OMEGA 1.4
 (TEST BN-878-001
 (RUN 05
 (25 JAN 82
 (PAGE 20



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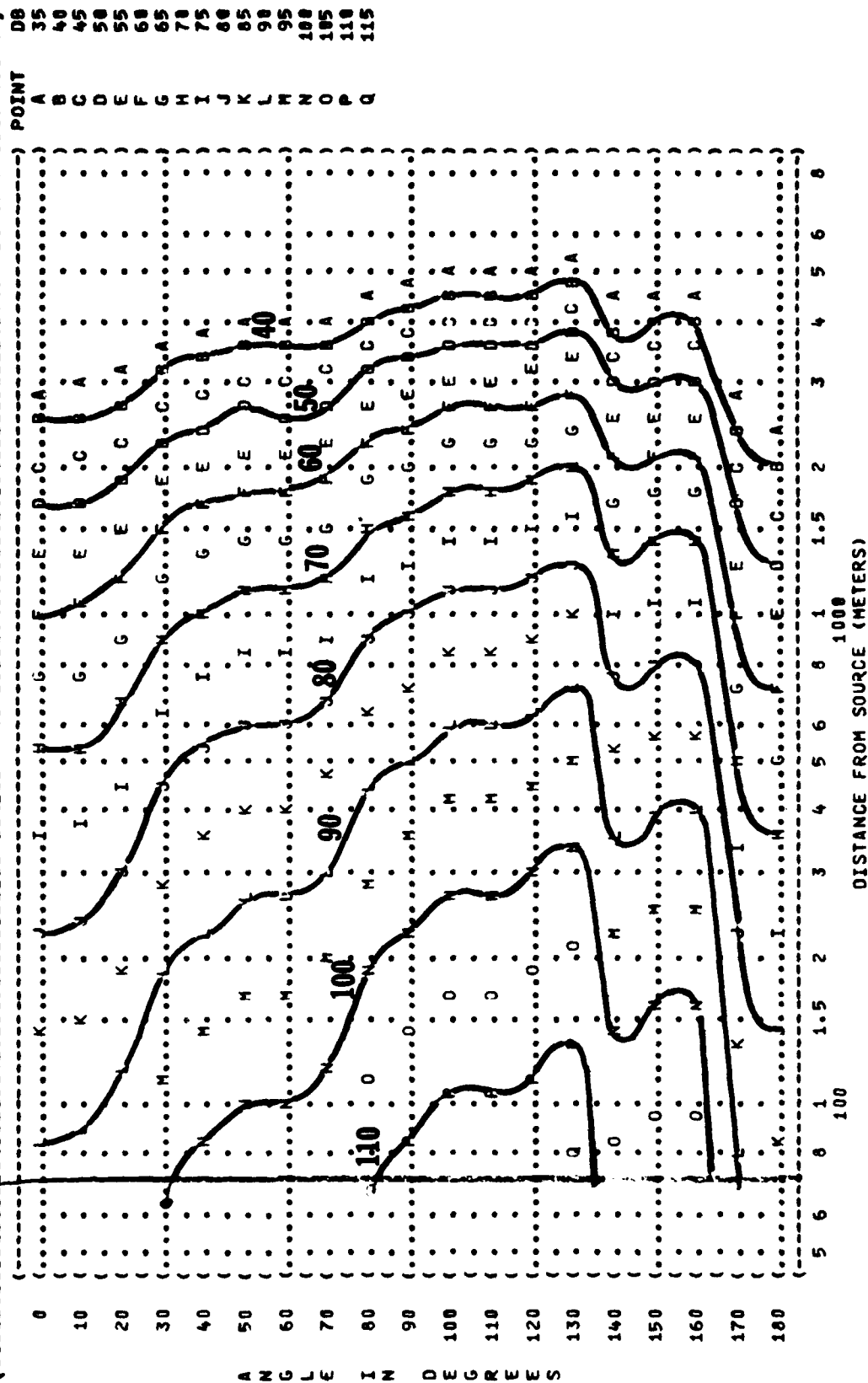
( ) FIGURE: SOUND PRESSURE LEVEL (SPL) ) IDENTIFICATION# )
( ) EQUAL LEVEL CONTOURS (DB) )
( )      11          250 HZ OCTAVE BAND ) OMEGA 1.4 )
( ) NOISE SOURCE/SUBJECT: ) TEST SN-876-001 )
( ) F-106A AIRCRAFT ) RUN 05 )
( ) ( AFTERBURNER PMR ) )
( ) ( 102% RPM ) BAR PRESS = .760 M HG )
( ) ( FREE FLOW ) REL HUMID = 70 % )
( ) ) ) PAGE 21 )

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DISTANCE FROM SOURCE (METERS)

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( { FIGURE: SOUND PRESSURE LEVEL {SPL} ) IDENTIFICATION: )
( { EQUAL LEVEL CONTOURS (DB) ) )
( { 11 ) OMEGA 1.4 )
( { 2000 HZ OCTAVE BAND ) TEST BN-878-001 )
( { NOISE SOURCE/SUBJECT: ) METEOROLOGY: )
( { F-106A AIRCRAFT ) OPERATION: )
( { (J75-P-17 ENGINE) ) AFTERBURNER PHR )
( { FAR FIELD NOISE ) 102% RPM ) BAR PRESS = .760 M HG )
( { FREE FLOW ) REL HUMID = 70 % )
( { ) ) PAGE 24 )
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(FIGURE: SOUND PRESSURE LEVEL (SPL))
 (11 EQUAL LEVEL CONTOURS (DB))
 (8000 HZ OCTAVE BAND)
 (NOISE SOURCE/SUBJECT:)
 (F-106A AIRCRAFT)
 ((J75-P-17 ENGINE))
 (FAR FIELD NOISE)
 (OPERATION:)
 (AFTERBURNER PMR)
 (182% RPM)
 (FREE FLOW)
 (METEOROLOGY:)
 (TEMP = 15 C)
 (BAR PRESS = .760 M HG)
 (REL HUMID = 70 %)
 (IDENTIFICATION:)
 (OMEGA 1.4)
 (TEST BN-070-001)
 (RUN 05)
 (25 JAN 82)
 (PAGE 26)

